The Global Health Classroom

Collaborative Global Health Learning between New Zealand and Samoan Medical Students in a Virtual Classroom

A thesis project submitted for the degree of

Bachelor of Medical Science with Honours

by

Roshit Kumar Bothara

at

The University of Otago,

Christchurch, New Zealand

2017

Abstract

Background

Global Health is recognised as an essential component of undergraduate medical curricula to equip future doctors with the relevant knowledge, attitudes and skills to practise in a globalised world. The Global Health Classroom (GHCR), the subject of this research project, has been developed at the Otago Medical School (OMS), New Zealand in collaboration with medical schools in Samoa and Nepal. The aim of the GHCR is to promote collaborative global health learning between medical students in different countries in a virtual classroom. In 2016, GHCR pilot studies were conducted between the partner schools and formed the basis of this Bachelor of Medical Science (Honours) Research Project in 2017.

In 2017, the GHCR was conducted between the OMS, Patan Academy of Health Sciences, Nepal (PAHS), and the School of Medicine, National University of Samoa, Samoa (NUS). Data collected from the GHCR participants at OMS and NUS were included in this thesis. At NUS, GHCR was integrated into the Year 4 and 5 medical curricula. At OMS, GHCR was integrated into the Year 5 Paediatrics Module at the University of Otago, Christchurch (UOC) and Year 4 Public Health Module at the Dunedin School of Medicine, Dunedin (DSM).

Aim

The aim of this study was to explore the self-reported learning outcomes and experiences of New Zealand and Samoan medical students in the GHCR, and ascertain the key elements contributing to their learning and experiences.

Methods

A census sample of UOC, DSM and NUS students who undertook the GHCR were invited to be participants in this research. Written, informed consent was obtained from students prior to their participation in this study.

A mixed-methods approach was developed using a questionnaire for all participants, and semi-structured interviews for participants selected by random sampling following participation in the GHCR. The questionnaire had a range of Likert-type scale and open-ended questions.

Quantitative data were descriptively analysed using SPSS Version 23 and qualitative data were thematically analysed. A triangulation approach informed the synthesis of the data.

Results

Of the participants, 85% (74/87) responded to the post-GHCR questionnaire. Nineteen interviews were conducted: six each with UOC and NUS students, and seven with DSM students.

Students reported gaining knowledge about patient care, healthcare systems, and the culture and determinants of health, in their partner country. There was evidence that attitudes such as cultural understanding and respect, curiosity and interest, humility and vision for progress were encouraged among students by their GHCR experiences. Reported outcomes in the GHCR align favourably with the recommended global health learning concepts in the literature.

Key elements for success in the GHCR were found to be: clinical cases and global health themed guiding questions; teachers as facilitators and students as self-directed learners; peer learning and social interaction; and video-conferencing.

Students' experiences in the GHCR were largely positive. Students found learning with their international peers in a virtual classroom made learning about global health "more real and tangible" and "much more accessible than learning [about global health] on a purely theoretical basis." Internet connectivity during video-conferencing and competing demands such as assignments, clinical teaching and assessments could at times be barriers limiting student engagement in the GHCR.

Conclusion

The findings in this study suggest that the GHCR presents a promising global health learning model embodying core values of partnership, collaboration and reciprocity between medical students and institutions in different countries.

Acknowledgements

I would like to extend my deepest gratitude to all those who have helped, supported and encouraged me over the course of this project. To complete this one-year research project with supervisors and medical students spanning three countries and two continents has been an incredibly enriching experience for me.

First and foremost, I would like to thank my primary supervisor, Doctor Andrew Miller, for your guidance, care and encouragement. Thank you for your generosity in making time for me on a daily basis this year.

Thank you to all my co-supervisors, Professor David Murdoch, Professor Tim Wilkinson, Doctor Susan Jack, Mrs Jen Desrosiers, Doctor Malama Tafuna'i, Doctor Tony Walls, Associate Professor Philip Pattemore, Faumuina Associate Professor Fa'afetai Sopoaga and Doctor Ashis Shrestha, for your advice, support and understanding.

Thank you, Professor David Murdoch, for creating the opportunity for me to learn and develop my interest in global health through this project. Your mentorship has been of great value to me and I hope to learn more from you, maybe in Nepali! Thank you, Doctor Malama Tafunai and Faumuina Associate Professor Fa'afetai Sopoaga, for hosting my two week stay in Samoa. I am truly privileged to have had the opportunity to learn about Samoan culture and become part of your family. Thank you, Professor Tim Wilkinson, Mrs Jen Desrosiers and Doctor Susan Jack, for your tireless efforts in helping me develop my understanding and sharing your perspectives. Thank you, Doctor Tony Walls and Associate Professor Philip Pattemore, for trusting me to guide our medical students and facilitate the classrooms. I gained so much from this experience and I am indebted to you for enabling this.

To all my supervisors, you have been inspiring and wonderful role models. I hope to continue learning from you all.

To all the medical students who participated in the GHCR at the Otago Medical School, University of Otago and School of Medicine, National University of Samoa, my deepest gratitude to you for contributing to my research project with your timely response to questionnaires. Thank you to all the Year 4 and 5 Samoan medical students who hosted me in Samoa. I value your friendship and I look forward to our future collaborations. Thank you also

to my friends, especially Sarah Heath, Tessa Lewis, Alex Lewis and Babita Jha, for your encouragement throughout this project.

I am thankful to the staff in the Department of Pathology and Department of Paediatrics at the University of Otago, Christchurch, and Office of the Associate Dean (Pacific), Health Sciences at the University of Otago, Dunedin. Thank you especially to Linda Kerr and Alice Milnes for assisting with the administrative aspects of this project. Pippa Scott, Sandy Slow and Piyush Jha, for your good humour, patience and support I thank you. I am also truly grateful to Yifang Parker, for assisting me with the mind-numbing task of transcribing interviews in this project. Thank you, Doctor Carole Acheson, Higher Education Development Centre, for your invaluable advice on thesis writing.

I have been fortunate during this research to attend the Samoan Medical Association Conference in Samoa and the International Association for Medical Education Europe Conference in Finland. I am truly thankful to Professor David Murdoch and Professor Tim Wilkinson for securing funding for these trips.

Last but not least, thank you to my parents, Jitendra Bothara and Manju Bothara, for your unconditional love, support and encouragement. I owe all my success to you. Thank you to my wonderful sister, Sneha Bothara, for you bring a smile to my face.

Reflective Statement

My interest in global health was piqued prior to commencing my medical studies. As a young boy growing up in Nepal I became interested in the interplay between society and culture, particularly because Nepal was undergoing major political reformation. After migrating to New Zealand, the perspectives, ideas and beliefs of my birthplace have been a constant influence, and sometimes, have been at odds with my experiences and learning here; especially after starting medical studies. My understanding of health in society is constantly under revision as I try to understand the worlds I have grown up in (Nepal), continue to grow in (New Zealand), and as I learn more about health systems and cultures.

At the end of my second year of medical studies at the Otago Medical School, New Zealand, I spent my summer in Nepal volunteering in the district hospital that I was born in. I assisted the medical team who were consulting and treating the patients, most of whom were from very impoverished backgrounds. I spent one morning with a junior doctor who went from one administrative block to another to confirm that he would be paid his salary on time. We assisted a non-government organisation to provide general healthcare to 120 students at a government primary school. Students arrived with no shoes, snotty noses and left with pockets full of antibiotics that they could neither read nor pronounce. My understanding of the role of doctors in the health system and numerous factors influencing health in society was transforming.

Upon starting my third year of medical studies, I realised I was yearning to better understand health systems and the factors influencing their success. This overarching interest led me to research the Global Health Classroom as a potential global health learning pedagogy. In this research, I was both an insider and an outsider in the research process.

I am insider to this research because I had prior interest in global health, influenced by my formative years growing up in Nepal followed by multiple visits over the years. I am also an insider because I am a medical student at the Otago Medical School, New Zealand. I am acquainted with most of the participants in this study, particularly the UOC and DSM students, some of whom are good friends. As I have completed my pre-clinical studies I have some understanding of New Zealand's health system, however I have not yet started my clinical studies. In this sense, I am an outsider to the perspectives of the participants in this study, all of whom were clinical students. In addition, during this research I assisted the UOC course

convenors with the administrative and logistical aspects of the UOC-NUS GHCR. This included guiding UOC students during case preparation and facilitating several of the GHCRs.

I am an outsider to this research because I was initially not very informed about the Samoan health system and culture. At the beginning of this research, I felt relatively confident in understanding the perspectives of the New Zealand student, but my lack of insight into the Samoan context meant I was not as confident in understanding the perspectives of the Samoan students. The values of equal partnership and collaboration were important to me in this research, and I wanted to represent both the New Zealand and Samoan students fairly and sensibly. To do this I had many discussions with my co-supervisor in Samoa who helped me understand the Samoan context. She introduced me to the Samoan students with whom I have had regular communication. Then, I spent two weeks in Samoa and was hosted by my co-supervisors. I attended the Samoan Medical Association Conference, which broadened my understanding of the Samoan health system. I then followed the doctors and medical students in the Paediatrics Ward, which helped me appreciate the context in which the Samoan students were learning. Throughout this year, I have tried my best to learn about the Samoan context because I wanted to interpret the perspectives of the Samoan students in this research in an informed manner. In this sense, I have shifted from being a complete outsider and progressed to becoming more of an insider to the Samoan context.

As doctors-in-training, we will increasingly play an influential role in healthcare delivery, governance and equity on both a national and global scale. We will be consulting and treating patients from diverse backgrounds, belief systems and ideologies. As academics and researchers, we may undertake projects in far-away settings with collaborators from diverse disciplines and backgrounds. Regardless of our roles, we will need to have the relevant knowledge, skills, and attitudes to be effective in our practice and collaborations in a globalised world.

The challenge for medical education is to address learning of global health in a transformative process. Medical students need to learn about different healthcare systems and cultures, develop research and leadership skills, and practise with values such as reciprocity and cultural humility. It is important that our medical curricula prepare us not just for the present, but also for the future so that we may be competent healthcare professionals, advocates and change agents, in an interdependent world.

Presentations and articles during this study

Oral presentations

1. Otago Global Health Institute Annual Conference, Dunedin, New Zealand
   November 15, 2017
   "Medical student experiences and outcomes from collaborative global health learning among New Zealand, Samoa and Nepal"

2. Symposium on Creativity, Innovation and Entrepreneurship, An International Association for Medical Education Europe (AMEE) Conference, Helsinki, Finland
   August 28, 2018
   "Experience and learning in the Elsevier Hackathon"

3. Paediatrics Rolling Half Day, University of Otago, Christchurch, New Zealand
   July 24, 2017
   "Global Health Classroom in the Year 5 Paediatrics Module"

4. Monday Seminar Series, University of Otago, Christchurch, New Zealand
   July 24, 2017
   "Global Health Classroom"

5. School of Medicine, National University of Samoa, Samoa
   May 31, 2017
   "Nepal to research in Global Health Classroom"

6. Summer Studentship Oral Presentation, University of Otago, Christchurch, New Zealand
   January 27, 2017
   "Virtual socialization and case-discussion between linked medical student groups in Nepal-NZ and NZ-Samoa during collaborative global health learning – why and how?"

Peer-reviewed journal articles

1. Badwan, B., Bothara, R., Latijnhouwers, M., Smithies, A., Sandars, J. (2017). The importance of design thinking in medical education. *Medical Teacher*: 1-2. DOI: 10.1080/0142159X.2017.1399203

2. Bothara, R. (2017). Conference Report: An International Association for Medical Education Europe Conference. *NZMSJ*, 25, 54-55. Retrieved from: http://www.nzmsj.com/uploads/3/1/8/4/31845897/54_issue_25issue_25_webcopy.pdf

Table of Contents

List of Tables

List of Figures

List of Abbreviations

BMedSc(Hons)	Bachelor of Medical Science with Honours
DSM	Dunedin School of Medicine, Dunedin, New Zealand
GHCR	Global Health Classroom
GHCR-S	GHCR 2016 Summer Studentship Research Project
HIC	High-income countries
i-VCR	Introductory video-conferencing
LMIC	Low- and middle-income countries
NUS	School of Medicine, National University of Samoa, Samoa
OMS	Otago Medical School, University of Otago, New Zealand
PAHS	Patan Academy of Health Sciences, Kathmandu, Nepal
p-VCR	Plenary video-conferencing
UOC	University of Otago, Christchurch, New Zealand
VCR	Video-conferencing Module

Chapter 1: Introduction

The world is changing. Medical doctors of the 21st century need to have the relevant and appropriate knowledge, attitudes and skills to practice in an increasingly interdependent, interconnected and interrelated world (Frenk et al., 2010; Houpt, Pearson, & Hall, 2007; Johnson et al., 2012). Globalisation has resulted in increasingly diverse populations and complex socioeconomic and environmental determinants of health (Braveman & Gottlieb, 2014; Lee, 2004; Stütz, Green, McAllister, & Eley, 2014). In response, global health has become widely regarded as a core component of the medical curriculum (McKimm & McLean, 2011).

1.1. Research Rationale

Koplan et al. (2009, p. 1995) define global health as "an area for study, research, and practice that places a priority on improving health and achieving health equity for all people worldwide." There is not yet a consensus on the competencies nor on effective learning approaches for global health education in medical school (Battat et al., 2010; Liu, Zhang, Liu, & Wang, 2015). The most common global health learning approaches reported in a literature review are didactic (lecture-based) and experiential (international field experience) (Battat et al., 2010). There is a lack of information on what global health competencies are covered in the didactic approach to global health learning in medical schools (Battat et al., 2010). Several studies suggest international field experiences help students learn about global health, but several factors, such as commercialisation and personal safety, have called into question the effectiveness of international field experiences for global health learning (Hanson, 2008; Hanson, Harms, & Plamondon, 2010; Haq, 2000; Sullivan, 2017). It has also become apparent that the objectives of international field experiences of medical students from high-income countries (HIC) do not consistently align with the priorities and needs of the low- and middle-income countries (LMIC) that constitute the common global health destination (Crane, 2011; Sullivan, 2017). Thus, it has been recommended that values of global health such as equity, collaboration and reciprocity should be replicated in global health learning partnerships between medical schools and institutions in LMIC and HIC (Adams, Wagner, Nutt, & Binagwaho, 2016).

Despite the lack of consensus on desired learning outcomes, global health learning concepts such as health system and impact on health, socioeconomic and environmental determinants

of health, and culture and impact on health, appear to be commonly recommended in the literature (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2017b). Learning approaches that are active, student-centred and transformative have been encouraged for global health learning (Frenk et al., 2010; McKimm & McLean, 2011). On review of the global health education literature there seem to be limited detailed studies on learning methodologies and processes that facilitate medical students' learning of global health (Harmer, Lee, & Petty, 2015; Khan et al., 2013; Lencucha & Mohindra, 2014). A global health learning pedagogy centred on creating opportunities for medical students in diverse settings to collaborate virtually on a learning task focused on global health, and thereby exposing them to diverse perspectives and beliefs, may lead to a more transformative and comprehensive understanding of global health (Ambrose, Murray, Handoyo, Tunggal, & Cooling, 2017; Lajoie et al., 2014; Procter, Brixey, Honey, & Todhunter, 2016). Furthermore, the utility of accessible and user-friendly digital media technologies means that opportunities for inter-cultural peer learning is no longer limited to face to face activities (Ambrose et al., 2017; Goldner & Bollinger, 2012; Keynejad, 2016).

The Global Health Classroom (GHCR), the subject of this research project, has been developed at the Otago Medical School, New Zealand (OMS) in collaboration with Patan Academy of Health Sciences, Nepal (PAHS) and School of Medicine, National University of Samoa, Samoa (NUS). The core values of reciprocity, equity and collaboration underscore the GHCR pedagogy. The GHCR is defined as:

> *"collaborative case-based learning by videoconferencing between medical students in diverse settings to exchange experiences and knowledge about their healthcare system and challenges, cultures, and determinants of health."*

The aim of the GHCR is to promote global health learning between medical students in different countries in a virtual classroom. In 2016, GHCR pilot studies were conducted between OMS, PAHS and NUS, and formed the basis of this research project in 2017.

The aim of this study is to explore the learning and experiences of New Zealand and Samoan medical students in the GHCR, and ascertain the key elements contributing to their learning and experience. This study will employ a mixed-method research method to draw on the advantages of quantitative and qualitative research to provide a more holistic investigation of the research questions, which may also extend the existing literature relating to similar learning models (Ambrose et al., 2017; Goldner & Bollinger, 2012; Keynejad et al., 2013; Murphy, Clissold, & Keynejad, 2017).

This project draws from and contributes to the areas of global health learning in medical school. It seeks to integrate findings of mixed-method research methods to determine the key elements of the GHCR which contribute to students' learning and experiences. By doing so, the feasibility and success of the GHCR as a potential model for global health learning may be ascertained.

1.2. Outline of Thesis

Each chapter in this thesis will address different aspects of this study. Chapter Two addresses how globalisation has influenced the evolution and emergence of the field of global health. It will explore the status and influences of health in a globalised world. This provides the background for establishing the importance of global health education in medical school curricula, followed by a critical review of the recommended global health competencies and learning approaches.

Chapter Three presents the origin and background of the GHCR, followed by brief detail on the GHCR 2016 Pilot and GHCR 2016 Summer Studentship Project, which informed the GHCR 2017 Learning Design and research protocol for this Bachelor of Medical Science with Honours (BMedSc(Hons)) Research Project.

Chapter Four presents the GHCR 2017 Learning Design which was integrated into existing undergraduate medical modules at OMS and NUS. Chapter Five outlines the methods of the mixed-method study design employed in this study.

Chapter Six presents the findings of this study and is divided into three sections. The first section outlines the demographic information about the study participants. The second and third sections present the self-reported experiences and learning outcomes of participants in the GHCR. Quantitative and qualitative data have been synthesised to present the findings.

Chapter Seven discusses the findings presented in Chapter Six and extends them to show the key elements of the GHCR that were important in contributing to student experiences and learning outcomes. The GHCR will then be compared with existing learning models using the key elements. The chapter ends with the study strengths and limitations, and the importance of the findings in this study. The thesis ends with concluding statements, followed by the references and appendices.

Chapter 2: Global Health

This chapter begins by discussing health in a globalised world to understand the evolution and scope of global health. Then, the importance of global health in medical curricula is discussed followed by present global health competencies and learning approaches. This will establish the context for this research project exploring the Global Health Classroom (GHCR) as a potential global health learning model.

2.1 Health in a globalised world

The world is going through a major transition in the health of populations due to influences associated with globalisation (Bongaarts, 2009). With increasing flows of people, products, services and information between and within countries and continents, globalisation presents both challenges and opportunities for health and healthcare delivery worldwide (McMichael & Beaglehole, 2000). Consequently, in this chapter the state of health in a globalised world is discussed in the context of migration and spread of communicable diseases, and demographic and epidemiological transitions in communicable and non-communicable disease, to lay the foundation for understanding the evolution, scope and definition of global health.

2.1.1 Migration and spread of communicable diseases

Migration of people and distribution of products have increased the transmission of communicable diseases, such as SARS[1], HIV/AIDS[2], and avian influenza as well as the proliferation of multidrug-resistant microorganisms (Kimball, Arima, & Hodges, 2005). As an example, the 2014-2016 Ebola outbreak originated from Guinea and spread to neighbouring West African countries including Liberia, Sierra Leone, Nigeria, Senegal, and Mali. Medical workers then furthered the spread to Spain and the United States. In Sierra Leone alone there were 14,124 total cases and 3,956 deaths (World Health Organization, 2016). Following the

[1] Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus.
[2] Human immunodeficiency virus (HIV) causes an infection, of which the most advanced stage is called acquired immunodeficiency syndrome (AIDS). HIV attacks and destroys infection fighting CD4 cells of the immune system.

outbreak, the World Health Organisation (WHO) declared the epidemic to be a Public Health Emergency of International Concern (PHEIC), an instrument of the International Health Regulations (IHR) which legally binds an agreement made by 196 countries on containment of major international health threats (WHO, 2014). In response, governments and organisations around the world made a concerted effort to control the spread and transmission of the virus to reduce the imminent mortality and morbidity (Briand et al., 2014). For example, the US Centre for Disease Control (CDC) activated its Emergency Operations Centre to coordinate technical assistance and activities with national and international government agencies and organisations (US Centre for Disease Control, 2016).

Communicable diseases, now more so than ever, have the potential to have a global impact due to the high mobility of people and goods, and porous nature of national borders to microorganisms (Pang & Guindon, 2004). The Ebola epidemic presents one of many communicable diseases which have called for a global response to mitigate the consequences.

2.1.2 Demographic and epidemiological transitions

Countries around the world are undergoing major demographic and epidemiological transitions, especially in LMIC. There has been a universal decline in the fertility and birth rate, coupled with a major increase in life expectancy, with a consequent increase in aging populations (Bongaarts, 2009). For example, between 1960 and 2015, the overall life expectancy in Canada increased from 71 to 82 years while the overall life expectancy in Brazil has increased from 54 to 75 years (World Bank Group, 2017). Health improvements around the world are primarily attributable to advancements in medical education, practice and technology (Jamison et al., 2013).

Alongside this demographic transition, there has been an epidemiological transition characterised by increases in the incidence and prevalence of non-communicable diseases (NCDs) such as diabetes, cancers and cardiovascular disease (Islam et al., 2014). The WHO estimates that by 2020, NCDs will account for 80% of the global burden of disease, causing seven out of every 10 deaths in LMIC (WHO, 2013). Over 90% of chronic obstructive pulmonary disease (COPD) deaths, two thirds of all cancer deaths, and 80% of cardiovascular and diabetes deaths occur in LMIC (Fuster, Kelly, & Vedanthan, 2011). Type 2 diabetes mellitus (T2DM) is one of the most alarming health problems around the world. While the prevalence

of T2DM for the year 2000 was around 188 million patients, it is estimated to be 400 million by the year 2030 (Correa-Rotter, 2004; Gross et al., 2004) . The prevalence of T2DM is expected to increase worldwide, nevertheless, HIC are expecting an increase of between 40% and 70% in the next 30 years, while that in LMIC will be around 250% in the same period (Gross et al., 2004). Thus, LMIC face double burden of disease, with both communicable and non-communicable diseases (Boutayeb, 2006; Correa-Rotter, 2004).

Many of the factors for increase in the non-communicable diseases in LMIC can be attributed to influences of globalisation, such as a shift from traditional food to processed foods high in sugar and salt, and increases in tobacco and alcohol consumption (Islam et al., 2014). Economic globalisation has led to a world economy increasingly dominated by a large number of transnational companies that are able to dictate the conditions of trade and practice much to the detriment of health of people, especially in LMIC (Koivusalo, 2006).

Despite the opportunities presented by globalisation, there are glaring inequities and inequalities in health within and between countries (Marmot, 2005). For example, if a Japanese woman develops a chronic disease, excellent treatment and rehabilitation services will be available and she can expect to receive, on average, healthcare worth about US$ 550 per year. In contrast, a woman in Sierra Leone can expect, on average, medicines worth about US$ 3 per year (WHO, 2003).

Inequalities exist within countries also. In New Zealand, for example, an analysis of health status data identifies three distinct types of ethnic inequalities in health – *distribution gap, outcome gap and gradient gap (*Reid, 2000). Firstly, distribution of Māori[3] and non-Māori in terms of socioeconomic deprivation is highly unequal given that more than half the Māori population live in very deprived neighbourhoods (NZDep deciles 8–10) (Howden-Chapman, 2000). Such findings demonstrate the *distribution gap*. Second, an *outcome gap*, where health outcomes for Māori and Pacific peoples are worse than those for non-Māori and non-Pacific peoples. For example, the average life expectancy at birth for Māori women is 76.5 years whereas for non-Maori women it is 83.7 years (Disney, 2017; Marriott, 2014; Reid, 2000). Finally, the *gradient gap* describes the relationship between health outcomes and increasing deprivation by ethnic group. It shows that the effect of increasing deprivation compounds health risk for Māori when compared to non- Māori, as demonstrated in the mortality rate data (Reid, 2000). Inequalities in health between Māori and non-Māori have resulted due to multitude of inequities, including differential access to the determinants of health and exposures, differential access to healthcare

[3] Indigenous people of New Zealand

and differences in the quality of care received (Howden-Chapman, 2000; Jones, 2001; Sadler, 2004).

Thus, inequities exist not only between countries, but also within countries, and to achieve the status of *health for all* both national and global inequities need to be prioritised. Future healthcare professionals need to have not only the relevant knowledge, but also the attitudes and skills necessary to address these health inequities.

2.1.3 Summary

Globalisation has tied together all peoples and nations in an interdependent, interrelated and interconnected global health space (Houpt et al., 2007; Lee, 2004) . Our populations are becoming more diverse and the determinants of health have become more complex (Braveman & Gottlieb, 2014; Lee, 2004). We live in a world where the social, political, environmental and economical determinants of health in one part of the world can becomes a concern throughout the world (Braveman & Gottlieb, 2014). As Gro Harlem Bruntdland (2001, n.p.), Former Director General of WHO, said:

> *In the past, desperate conditions of another continent might cynically be written out of one's memory. The process of globalisation has already made such an option impossible. In the modern world, bacteria and viruses travel almost as fast as money. With globalisation, a single microbial washes all of mankind. The separation between domestic and international health problems is no longer useful.*

Global movements of people, pathogens, technologies and knowledge underlie the present global health challenges, paradoxically the very nature of globalisation presents the opportunities to better health for all (Drain et al., 2007; Koplan et al., 2009). As Gro Harlem Bruntdland (2001, n.p.) succinctly said:

> *...so many challenges we face now have a global impact, requiring global solutions and a global response.*

2.2 Evolution, scope and definition of the field of global health

2.2.1 Evolution of global health

Global health is an emerging field in research, education and development. According to Koplan et al. (2009), the study and practice of global health originates from public health and international health, which in turn is derived from hygiene and tropical medicine. Public health developed in the 19th century as part of the advancement of biological and medical knowledge, and social reform movements (Brown, Cueto, & Fee, 2006; Koplan et al., 2009). At the time, a number of prominent scientists established the discipline of public health based on four factors: an emphasis on prevention rather than cure; a goal of social justice and equity; a focus on populations rather than individuals; and decision making based on data and evidence (Koplan et al., 2009; Porter, 1997).

These elements are embedded in most definitions of public health. Winslow (1920, p. 30) defined public health as the

> *... science and art of preventing disease, prolonging life and promoting physical health and efficacy through organised community efforts for the sanitation of the environment, the control of communicable infections, the education of the individual in personal hygiene, the organisation of medical and nursing services for the early diagnosis and preventive treatment of disease, and the development of social machinery which will ensure every individual in the community a standard of living adequate for the maintenance of health; so organising these benefits in such a fashion as to enable every citizen to realise his birthright and longevity.*

Winslow's (1920) definition of public health has stood the test of time as it has been influential in the public health mission, substance and organisational framework of major health organisations and governments (Koplan et al., 2009). The US Institute of Medicine, in its 1988 *Future of Public Health* report defined its missions of public health as "fulfilling society's interest in assuring conditions in which people can be healthy" (Walker, 1989, n.p.).

International health has a more recent history (Koplan et al., 2009). For many decades, it was the term used for health work in developing countries, especially relating to infectious and

tropical diseases, water and sanitation, malnutrition, and maternal and child health (Koplan et al., 2009). Merson (2006, n.p.) views international health as "the application of the principles of public health to problems and challenges that affect low and middle-income countries and to the complex array of global health local forces that influence them". Many academic institutions and organisations still use the term international health but have broadened their scope to include subjects such as health systems and chronic diseases (Koplan et al., 2009). International health, as defined by the Global Health Education Consortium, is a sub-specialty that "relates more the health practises, policies and systems… and stresses more the differences between countries than their commonalities" (as cited in Koplan et al., 2009, p. 1993). There are conflicting views regarding the use of international health, and many organisations and researchers consider international health to be limited to diseases of the developing world. In contrast, many find international health a relevant and usable term, and have adapted it to align with the philosophy and content of present global health practice (Koplan et al., 2009).

The field of global health has overlap with public health and international health (Koplan et al., 2009). All three areas share the following characteristics: priority on a population based and preventive focus; concentration on poorer, vulnerable and underserved populations; multidisciplinary and interdisciplinary approaches; emphasis on health as a public good; the importance of systems and structures; and the participation of several stakeholders (Koplan et al., 2009).

2.2.2 Scope of global health

In view of the commonalities between global, international and public health, there has been widespread confusion about the scope and definition of global health (Table 2.1). With regards to global health, Koplan et al. (2009, p. 1994) contend that "global refers to any health issue that concerns many countries or is affected by transnational determinants, such as climate change or urbanisation, or solutions, such as polio eradication". Global health addresses not only infectious disease and tropical infections but also tobacco control, obesity and mental illness (Koplan et al., 2009). "Global" in global health refers to the scope of problems, not their location, differing from international health, which has focused exclusively on the scope of health challenges in developing countries (Frenk, 2014; Koplan et al., 2009).

Table 2.1. Comparison of global health, international health and public health (reproduced from Koplan et al., 2009).

	Global health	**International health**	**Public health**
Geographical reach	Focuses on issues that directly or indirectly affect health but that can transcend national boundaries	Focuses on health issues of countries other than one's own, especially those of low-income and middle-income	Focuses on issues that affect the health of the population of a community or country
Level of cooperation	Development and implementation of solutions often requires global cooperation	Development and implementation of solutions usually requires binational cooperation	Development and implementation of solutions does not usually require global cooperation
Individuals or populations	Embraces both prevention in populations and clinical care of individuals	Embraces both prevention in populations and clinical care of individuals	Mainly focused on prevention programmes for populations
Access to health	Health equity among nations and for all people is a major objective	Seeks to help people of other nations	Health equity within a nation or community is a major objective
Range of disciplines	Highly interdisciplinary and multidisciplinary within and beyond health sciences	Embraces a few disciplines but has not emphasised multidisciplinary	Encourages multidisciplinary approaches, particularly within health sciences and with social sciences

Global health encompasses more complex transactions between societies, based on a shift in philosophy and attitudes compared to international health (Koplan et al., 2009). The steady evolution of philosophy, attitude and practice has led to an emphasis on the mutuality of real partnership, pooling and sharing knowledge and experience, and bidirectional reciprocity and collaboration between LMIC and HIC (Koplan et al., 2009). Thus, global health harnesses the knowledge and experience of diverse societies to address health challenges throughout the globe. Global health has a multidisciplinary scope and involves professionals from diverse disciplines such as law, economics and history to address the social, economic, political and environmental determinants of health worldwide (Koplan et al., 2009).

The term "global health" is increasingly used to emphasise the global commonality of health issues that transcend national borders, socioeconomic status, ethnicity, the status of women and children, political instability, war, environmental degradation and genetic susceptibility, which are often the same worldwide (Houpt et al., 2007). This collective approach to

development and progress is best exemplified by the Sustainable Development Goals (SDGs), also known as Global Goals, which aim to end all forms of poverty and inequality, improve health and the environment, and address climate change (United Nations, 2015). The SDGs were adopted at the UN Sustainable Development Summit in 2015 by 193 world leaders (United Nations, 2015). These goals are unique because they call for action from all countries regardless of their stage of development, with core values of collaboration, shared responsibility and partnership (United Nations, 2015)

2.2.3 Definition of global health

There is not yet a consensus on the definition of global health. Koplan et al. (2009) propose that global health can be thought of as a notion (current state of the world), objective (a world of healthy people) and a mix of scholarship, research and practice. According to Koplan et al. (2009, p. 1995), global health is

> *… an area of study, research, and practice that places a priority on improving health and achieving health equity for all people worldwide. Global health emphasises transnational health issues, determinants, and solutions; involves many disciplines within and beyond the health sciences and promotes interdisciplinary collaboration; and is a synthesis of population-based prevention with individual-level clinical care.*

According to Beaglehole and Bonita (2010, p. 5142), this definition is useful but "wordy and uninspiring". They propose a definition based on Koplan et al. (2009) that is shorter, sharper, emphasises the need for collaboration and research, and is action orientated: "collaborative and transnational research and action for promoting health for all" (Beaglehole & Bonita, 2010, p. 5142).

This research project does not seek to define global health. The definition of global health as proposed by Koplan et al. (2009) has been adopted in this study because it is widely referred to in the global health education literature (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2017b).

2.3 Importance of global health education in medical school

Global health education in medical curricula is important due to the global health demands on new doctors, social accountability mission of medical schools and medical student interest in global health.

2.3.1 Global health demands on new doctors

Health professionals need the relevant knowledge, skills and attitudes to practise and collaborate effectively in a globalised world (Frenk et al., 2010; Johnson et al., 2012). The *Lancet Commission* report on health professional education in the 21st century (Frenk et al., 2010) found that current health professional education has become outdated and fragmented because it does not match current global health challenges, such as widening inequities in health within and between countries alongside rapid demographic and epidemiological transitions. In the report, Frenk et al. (2010, p. 6) call for a new era in health professional education based on transformative learning and interdependence in education, and put forward their vision for the third-generation reform of medical education:

> *All health professionals in all countries should be educated to mobilise knowledge and to engage in critical reasoning and ethical conduct so that they are competent to participate in patient and population-centred health systems as members of locally responsive and globally connected teams.*

Frenk et al. (2010) emphasise the importance of global health education and state that the imperatives for global health are driven by the need for local adaptations due to global flows, interdependence in health and opportunities in global health. They state that health professionals practising and collaborating with a global perspective will improve their understanding of causes and solutions for local problems and local adaptive capacity because of mutual learning (Frenk et al., 2010).

Institutions therefore need to produce medical graduates who can "think globally but act locally" to deliver appropriate healthcare and adapt to the evolving needs of communities and

populations (Macfarlane et al., 2008; McKimm & McLean, 2011). McKimm and McLean (2011, p. 627) state in their paper "Developing a global health practitioner: Time to act?" that

> *...in a shrinking world in which political, environmental and social factors impact on individual nations, it is short-sighted not to educate healthcare practitioners to be global citizens with the skills, knowledge and leadership abilities to practice in a range of cultural setting and clinical contexts. Urgently needed are global practitioners whose advocacy role extends beyond national boundaries and who can work within disparate healthcare systems amidst populations and changing disease patterns.*

Thus, the medical curricula need to emphasise global health education to address the wide range of cultural, environmental and ethical issues that will increasingly impinge on the problems of health and practice (General Medical Council, 2002).

2.3.2 Social accountability of medical schools

Medical education is an evolving field. At the beginning of the 20th century, the 1910 Flexner Report transformed the nature and process of medical education across the world to be based on the biomedical model of teaching as the gold standard (Duffy, 2011; Norman, 2012). Around the mid-century, the second generation of medical education based on problem-based instruction came about (Jamison et al., 2013; Neufeld, Norman, Feightner, & Barrows, 1981). Now, it is argued a third generation of medical education is needed:

> *The 21st Century presents medical schools with a different set of challenges: improving quality, equity, relevance and effectiveness in health care delivery; reducing the mismatch with societal priorities; redefining roles of health professionals; and providing evidence of impact on people's health status* (Global Consensus on Social Accountability of Medical Schools, 2010, n.p.).

In response to these challenges, 130 organisations and individuals from around the world with expertise in health education, professional regulation and policy making participated in a three-round Delphi process to come to a consensus on directions for medical schools to become more socially accountable (Global Consensus on Social Accountability of Medical Schools, 2010). Social accountability (Boelen & Heck, 1995, p. 3) is described as the

> *obligation of medical schools to direct education, research and service activities towards addressing the priority concerns of the community, region or nation that they are mandated to serve. The priority health concerns are to be identified jointly by governments, healthcare organisations, health professionals and the public.*

Medical schools are social institutions, part of the greater health system that extends the discovery-care-education continuum into local and global community contexts (Horton, 2010). The World Federation for Medical Education (WFME) states medical curriculum committees should seek input from the national and global environment in which the graduate will practise and collaborate, and should undertake curriculum development in response to feedback from the community and society (WFME, 2003). The Otago Medical School, in the document *A Masterplan for the Otago Medical Curriculum of the Future*, states that it "is committed to developing effective processes for such engagement that delivers real benefits for our students, the School and its campuses and for our local communities" (Otago Medical School, 2015, pp. 14-15).

Thus, medical schools need to be constantly developing their medical curricula to be socially accountable by adapting to the local and global context, and to produce competent doctors who think globally and act locally.

2.3.3 Medical student interest in global health

Medical students' interest in global health is evident with their leadership and involvement in relevant organisations and activities, and their call for more global health education and international rotation opportunities during their medical studies (Gopfert et al., 2014; Khan et al., 2013; McKimm & McLean, 2011). Kanter (2008, pp. 115) believes it is the feeling of "enhanced connectedness on a global scale – the sense of global community" that leads students to seek educational opportunities to enrich their understanding of the practice of medicine in other systems and cultures.

In recognition of this sense of global community, medical students have started global health organisations and initiated activities outside of their formal curriculum. The International Federation for Medical Students' Association (IFMSA) is an umbrella organisation for medical students in over 100 countries and has over 1.3 million members. It is recognised by the UN and WHO as the international voice for medical students (IFMSA, 2017). IFMSA has promoted

global health education through numerous UN related bodies and organised projects and exchanges. For example, the IFMSA has organised projects to raise awareness of migrants' right to health and has also published documents such as the *Global Health Toolkit* (Duvivier, Mansouri, Iemmi, & Rukavina, 2010; IFMSA, 2014; Villafuerte-Galvez, Curioso, & Miranda, 2008). Medical student groups have also contributed to the medical curricula by developing core curriculum standards and frameworks. For example, students in Canada developed a framework for the teaching of peace and health in the curriculum (Arya, 2004)

In 2007 medical students from New Zealand, Australia and Fiji began a humanitarian project called The Fiji Village Project (FVP), with the aim of using a collaborative approach to address basic public health challenges in village settings in Fiji. Students are involved in planning, assessing need, raising awareness and funds in their home countries, and implementing appropriate interventions (Deng, 2009). Although there has been no formal assessment of the outcomes and efficacy of the FVP, anecdotal experiences suggest potential for participants to gain personal, clinical and educational benefits, as well as potentially making a difference in improving the health and quality of life of the local community (Deng, 2009; Singh, McCool, Weller, & Woodward, 2012). Importantly, though, student-led initiatives such as the FVP must have formal evaluation to ensure that their activities align with the priorities, needs and preferences of their partners who generously host the students. Furthermore, student-led initiatives should be centred on core values of global health such as reciprocity, collaborative partnership and equity (Adams et al., 2016).

In New Zealand, a group called the Medical Students for Global Awareness (MSGA) addresses health inequities on a local and global scale by raising awareness and advocating for a healthy, sustainable and equal world (MSGA, 2017). The mission of MSGA is to empower medical students with the relevant knowledge and skills to act on global health issues. With regional teams based in Auckland, Wellington, Christchurch and Dunedin, it organises seminars, workshops, submissions and fundraising projects (MSGA, 2017) . For example, medical students in Dunedin organise a "Do it in a Dress" campaign where students run the Dunedin Cadbury Marathon in school-uniform-style dresses to raise funds for education scholarships for girls in Sierra Leone (Taylor, 2016). In 2016, the New Zealand Medical Students' Association (NZMSA) and MSGA made a joint submission to the Government Administration Select Committee regarding the Healthy Homes Guarantee Bill advocating for the "importance of quality housing for good health and urg[ing] the Government Administration Committee to support action to improve the quality of New Zealand's rental housing stock" (MSGA, 2016).

Medical students recognise the importance of global health education and experiences. This is evident from their leadership and involvement in student-led global health groups, and the increasing uptake of overseas volunteering opportunities.

2.4 Competencies and concepts in global health education

Medical schools are under constant pressure to update their curricula according to evolving needs and competency requirements for health professionals, and to incorporate effective learning methods and course content. Literature on global health education for medical students has focused on competencies rather than prescribing a specific global health curriculum. Competencies are used to set assessable standards for knowledge and performance, and are important to curriculum development, evaluation and integrity (Gebbie, 2004; Smith, 2009). Competencies can be divided into three conceptual approaches focusing on knowledge, attitudes and skills; each plays a crucial role analogous to a three-legged stool which is unable to support any weight unless all three are supporting (Betancourt, 2003). Medical schools accordingly develop their own global health curriculum based on current and predicted local health needs, and their faculty expertise, experience, institutional partnerships and resource availability.

There has been a significant drive to standardise global health competencies and attempts have been made to identify and collate the core competencies of a global health curriculum (Battat et al., 2010; Evert, 2008; Houpt et al., 2007; Johnson et al., 2012; Peluso et al., 2017a). Battat et al. (2010) undertook an extensive literature review to identify competencies for teaching global health in medical school (Table 2.2). The review of 32 articles found no clear consensus on which global health competencies were most commonly taught in medical schools. The most commonly mentioned competencies were global burden of disease, travel medicine, health disparities between countries and primary care within diverse settings. Importantly, no single competency was mentioned in more than 16% of identified articles, which suggests a lack of consensus on what the key global health competencies are (Battat et al., 2010). Thus, developing consensus on global health competencies is a critical step to ensuring all medical students graduate with the relevant knowledge, attitudes and skills.

Table 2.2. Identification of current global health competencies and percentage of articles (N=32) recommending the competency (Battat et al., 2010).

Competency	Competency type	%
Skills to better interface with different populations, cultures and healthcare systems	Knowledge Behaviour	15.6
An understanding of immigrant health	Knowledge Behaviour	9.4
Primary care within diverse cultural settings	Physical exam Clinical skills	9.4
Understand healthcare disparities between countries	Knowledge	6.3
An understanding of the burden of disease	Knowledge	6.3
An understanding of travel medicine	Knowledge	6.3
Develop a sense of responsibility	Knowledge Behaviour	6.3
Appreciate contrasts in healthcare delivery systems and expectations	Knowledge	3.1
Humanism	Knowledge Behaviour	3.1
Scientific and societal consequences of global change	Knowledge	3.1
Evolving global governance issues	Knowledge	3.1
Cost of global environmental change	Knowledge	3.1
Taking adequate patient histories and physical examinations in resource poor settings	Physical exams Clinical skills	3.1
Cost-consciousness; using physical diagnosis without high technologic support	Clinical skills	3.1

One of the limitations of current literature on recommended global health learning competencies is that they originate primarily from North America and Europe. Liu et al. (2015) found that the great majority of the studies on global health education (94.6%) were conducted in North American and European countries. This does not necessarily mean there is a lack of global health education in medical schools in developing countries; rather, it is most likely due to the low number of publications on global health education originating from developing

countries (Liu et al., 2015). Thus, there needs to be greater collaboration between developing and developed countries to reach a consensus regarding the recommended global health learning competencies.

The global health learning concepts recommended in articles by Johnson et al. (2012), Jogerst et al. (2015) and Peluso et al. (2017b) are summarised in Table 2.3. Two of these papers originate from important global health education groups (Johnson et al., 2012; Peluso et al., 2017b) and the other is an extensive literature review (Jogerst et al., 2015).

Table 2.3. Combined list of recommended global health learning concepts and competencies (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2017b).

Recommended global health learning concepts	Competencies
Cultural diversity and health	Knowledge Attitude Skills
Health systems	Knowledge
Determinants of health	Knowledge
Global burden of disease	Knowledge Skills
Human rights and ethics	Knowledge Attitudes Skills
Health equity and social justice	Knowledge Attitudes Skills
Practice of global health	Knowledge Attitudes Skills

Furthermore, an important aspect of competency in global health is an attitude of cultural humility, described as an ongoing process of self-reflection and self-critique of one's own culture while striving to respectfully understand that of others, of redressing power balances, and developing mutually beneficial and non-paternalistic partnerships with patients and other healthcare professionals (Miller, 2009; Peluso, Encandela, Hafler, & Margolis, 2012; Tervalon & Murray-García, 1998). Essentially, cultural humility means having respect and curiosity towards cultures other than one's own (Peluso et al., 2012). Cultural humility is a key component of global health education because future healthcare professionals will need to care for patients from diverse backgrounds, and will need to address racial, cultural and gender biases in healthcare delivery (Betancourt, 2003) . Additionally, cultural humility is a core value for healthcare professionals from diverse backgrounds and beliefs to collaborate effectively to address global health challenges (Peluso et al., 2012)

As there is not yet a consensus on global health competencies among global health educators (Battat et al., 2010), this study refers to the global health learning concepts from Jogerst et al., 2015; Johnson, 2012; Peluso, van Schalkwyk, et al., 2017 listed in Table 2.3.

2.5 Learning approaches to global health education in medical curricula

In response to the increasing importance of global health, medical schools have introduced a wide range of learning approaches that vary in their quantity, quality and content of global health concepts (Battat et al., 2010; Drain et al., 2007; Eaton et al., 2011; Liu et al., 2015). Battat et al. (2010) found that the most common educational approaches for global health were didactic (37%) and experiential learning (41%).

A didactic approach to teaching refers to a manner of instruction in which information is presented from the teacher to the learner in a one-directional flow of ideas and concepts. Battat et al. (2010) were unable to identify the competencies covered in the didactic approach to global health education due to the lack of description in the identified articles. Despite the widespread use of a didactic approach in global health education, medical educators suggest a shift to student-centred pedagogies that are transformative (Frenk et al., 2010)

An experiential learning approach involves a process whereby knowledge is created through transformation by experience (Tan & Sutton, 2010). International field experiences are the most common form of experiential learning of global health (Battat et al., 2010; Liu et al., 2015). Many medical schools, including the Otago Medical School, have elective components whereby students can gain clinical experiences in healthcare settings in another country (Battat et al., 2010; Drain et al., 2007). Studies suggest that the benefits of international field experiences for students include gaining knowledge of diseases foreign to their home country, acquisition of communication and language skills, recognition and deeper understanding of determinants of health, cultural understanding and self-development (Drain et al., 2007; Haq, 2000; Niemantsverdriet, Majoor, van der Vleuten, & Scherpbier, 2004).

Despite the popularity and breadth of international field opportunities available to medical students, factors such as personal safety, health risks and commercialisation of international experiences have called into question the effectiveness of international field experiences for global health learning (Hanson, 2008; Hanson et al., 2010; Haq, 2000; Sullivan, 2017). It has also become apparent that the objectives of international field experiences of medical students from high-income countries do not consistently align with the priorities and needs of the low- and middle-income countries that constitute the common global health destinations (Crane, 2011). In addition, the reciprocity of high-income countries as hosts to students from under-resourced countries is often not equitable (Crane, 2011). Adams et al. (2016) state that the values of global health such as equity, collaborative partnership and reciprocity should be replicated in partnerships between medical schools and institutions in LMIC and high-income countries.

Furthermore, opportunities for international field experience is available to medical students in high-income countries but is limited for students in low- and middle-income countries due to financial constraints (Adams et al., 2016; Jeffrey, Dumont, Kim, & Kuo, 2011). Medical schools in low- and middle-income countries have shown increased engagement and implementation of global health education in their medical curricula, which sets up an imperative that pedagogies for global health education need to be developed to fit the needs and interests of all participating countries, regardless of their location (Abedini, 2014; Liu et al., 2015; Peluso et al., 2017b). Digital media technologies, such as video-conferencing and online learning platforms, might provide a feasible and cost-effective approach for connecting medical students in diverse countries to learn collaboratively about global health(Ambrose et al., 2017; Goldner & Bollinger, 2012; Keynejad et al., 2013; Liu et al., 2015; Murphy et al., 2017).

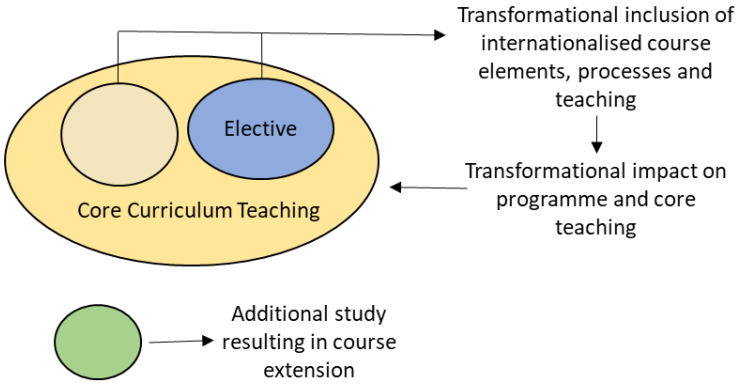


Figure 2.1. "Transformative" approach calls for global health to become a core component of the medical curriculum that is embedded throughout the curriculum in a dynamic and interactive manner (Eaton, Redmond, & Bax, 2011).

Eaton et al. (2011) suggest current global health education approaches in the medical curricula should move from the fragmented and additive to more integrated and transformative learning approaches (Figure 2.1). Transformative learning involves experiencing a deep, structured shift in the basic premises of thought, feelings and actions; and may occur when learners experience a progressive sequence of insights leading to change in perspective (Mezirow, 1990). Transformative learning is considered important in global health learning so that future doctors can produce meaningful change when addressing the global health challenges (Frenk et al., 2010).

2.5.1 Conclusion

Global health needs to be integrated into the medical curriculum as a core component, with learning approaches that are active and transformative, to ensure future doctors have the relevant knowledge, attitudes and skills to practise in a global world (Eaton et al., 2011; Frenk et al., 2010; McKimm & McLean, 2011; Stütz et al., 2014). Importantly, the values of global health, particularly equity, reciprocity and collaboration, need to be replicated in global health education and practice (Adams et al., 2016). Thus, the challenge at present is to develop global health learning pedagogies that enable transformative learning and are based on key values of global health. This project aims to addresses this challenge by exploring the Global Health Classroom as a potential global health learning model.

Chapter 3: Background to the Global Health Classroom

This chapter presents the origin and development of the Global Health Classroom (GHCR) collaborations at OMS, including the 2016 GHCR Pilot and the 2016 GHCR Summer Studentship Project (GHCR-S). The findings of the 2016 GHCR Pilot and GHCR-S informed the GHCR 2017 Learning Design (Chapter 4) and Methods (Chapter 5).

3.1 Origin and Development

The concept for the GHCR arose from the Video-conferencing Module (VCR) at the Patan Academy of Health Sciences, Nepal (PAHS). PAHS is based in Kathmandu, the capital of Nepal. Year 5 PAHS medical students spend six months in one of four rural district placements (Figure 3.1) as part of their rural immersion programme. The VCR is part of their rural immersion and consists of weekly video-conferencing between the four groups of students in their rural settings and a medical teacher in the capital. Each group presents PowerPoint presentations consisting of specific clinical cases and relevant guiding questions as outlined in the VCR Student Manual. The aim of the VCR is to connect students in their rural settings to teachers in the capital who facilitate a virtual small-group tutorial based on the presented cases. Students receive guidance regarding their case management and can ask questions relating to their clinical practice.

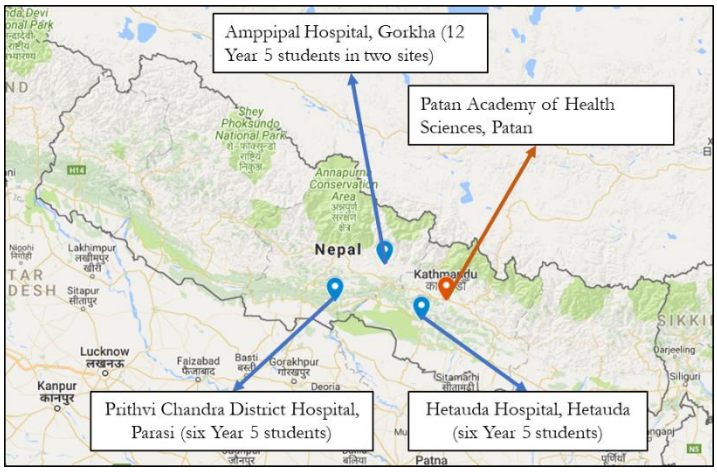


Figure 3.1. Map of Nepal showing location of PAHS in relation to the rural healthcare centres in which PAHS students spend six months of their Year 5 (adapted from "Google Map: Nepal" 2017).

Professor David Murdoch's (Dean at the University of Otago, Christchurch) visit to Nepal in 2015 led him to inquire whether video-conferencing could include OMS students to enable students from both countries to learn about each other's healthcare systems and challenges, and cultures. In 2016, this was trialled between University of Otago, Christchurch (UOC)[4] and PAHS. In addition, the Dunedin School of Medicine, Dunedin (DSM)[5] and School of Medicine, National University of Samoa, Samoa (NUS) trialled a similar case-based learning video-conference initiative between their medical students. Collectively the initiative was called the GHCR. The experiences and learning from these pilots is presented briefly in Section 3.2. The 2016 GHCR Pilot laid the foundation for the GHCR-S, which is discussed in Section 3.3.

3.2 Experience and learning from GHCR Pilot 2016

The 2016 GHCR Pilot was conducted between PAHS and UOC (Figure 3.2), and DSM and NUS. Both PAHS-UOC and DSM-NUS had three GHCRs.

The UOC-PAHS GHCR was facilitated by course convenors based in UOC and PAHS, and the DSM-NUS by course convenors based in DSM and NUS. The researcher was not involved in the 2016 GHCR Pilot and this information is presented briefly only to show how the GHCR was developed. Student learning and experiences presented here is based on the researcher's conversations with course convenors.

Figure 3.2. Global Health Classroom in 2016 between UOC and PAHS medical students in their rural district placements.

[4] One of the three Otago Medical School (OMS) campuses.

The main findings were:

- The UOC-PAHS GHCR Pilot showed potential for learning about each other's healthcare systems and culture; however, the poor connectivity during video-conferencing and lack of a structured protocol for the video-conferencing session resulted in dissatisfaction among participating students.
    - Students commented that there was a need to develop the learning design and improve logistics to ensure the session would be more interactive and conducive to global health learning in the GHCR.
    - The PAHS-UOC sessions were based on the pre-existing PAHS VCR format.
- The DSM-NUS GHCR Pilot showed greater learning among students and more positive experience among students than the UOC-PAHS Pilot. This was partly due to more aligned time zones and relatively good connectivity during video-conferencing, which allowed students to present and discuss the learning material. Furthermore, a bespoke and well-structured format was implemented for the video-conferencing sessions.

Overall, the GHCR Pilot showed there was a need to develop the learning design with clear objectives, tasks and structure, and improve the logistical aspects such as video-conferencing.

3.3 2016 GHCR Summer Studentship Project (GHCR-S)

The GHCR-S arose from the desire to develop the GHCR learning design following the GHCR 2016 Pilot. This section briefly discusses the aim, methods, results and discussion arising from the summer project.

3.3.1 Project aim and research approach

The aim of the Summer Studentship Project was to trial the GHCR between OMS and NUS, and further develop and evaluate the learning design. The research questions were:

1) What are the self-reported experiences of medical students in the Global Health Classroom?
2) What are the self-reported learning outcomes of medical students in the Global Health Classroom?
3) What role could Facebook play in the Global Health Classroom?

The secondary aim was to enable the researcher to become familiar with the GHCR. This helped to inform the research protocol and questions as part of this BMedSc(Hons) Research Project.

A quantitative methodology was chosen for the research project. The method involved a post-GHCR-S questionnaire for participants.

3.3.2 Method

3.3.2.1 Participant selection

Participant selection for this summer project was volunteer based. Participants eligible for inclusion in this project included medical students undertaking summer studentship projects at UOC and DSM, and medical students at NUS. The researcher recruited volunteers at UOC by requests for interest during the Summer Studentship Project Oral Presentation in November 2016. Volunteers in DSM were recruited by the DSM course convenor and NUS medical students were recruited by the NUS course convenor.

The optimal number of volunteers per country group was decided to be 10-14 students, which is consistent with small-group tutorial classes. Medical students at any year of study were eligible for inclusion to ensure recruitment of an optimal number of volunteers. Volunteers were recruited from DSM as well as UOC to ensure an optimal number of students would be reached in the New Zealand group. Information relating to the GHCR-S consent process was communicated to all participants by email. Convenors in UOC, DSM and NUS ensured participants were briefed on the GHCR-S. Participants and course convenors came together in the plenary video-conferencing session.

3.3.2.2 The researcher's position

The researcher was involved with the GHCR-S upon completing his third-year of medical studies. The research project was an opportunity for the researcher to become familiar with the GHCR for further exploration and development in 2017 as part of the BMedSc(Hons) Research Project. The researcher assisted with the logistics and administrative aspects of the GHCR-S, as well as producing the "GHCR-S Student Guide" (Appendix 7) and "Social Media and Learning Guideline" (Appendix 2). The researcher created and moderated the closed Facebook "GHCR-S" group during the collaboration.

The researcher was acquainted with most of the New Zealand participants. This relationship may have influenced the recruitment phase, questionnaire response rate, and introduced social desirability bias.

3.3.2.3 Ethical aspects

In accordance with the University of Otago Ethics Committee guidelines and consultation with Academic Committees Office, an Ethics Category B application was sought and approved in December 2017 (Appendix 1). Participants were provided with an "Information Sheet for Participants" and consent form (Appendix 2) to be physically or electronically signed prior to participation.

3.3.2.4 GHCR-S Learning Design

All participants were emailed a "GHCR-S Student Guide" which had information regarding the objectives, tasks and important dates for the GHCR-S. The document has been attached in Appendix 7. An overview of the GHCR-S Research Project and Learning Design is shown in Figure 3.3.

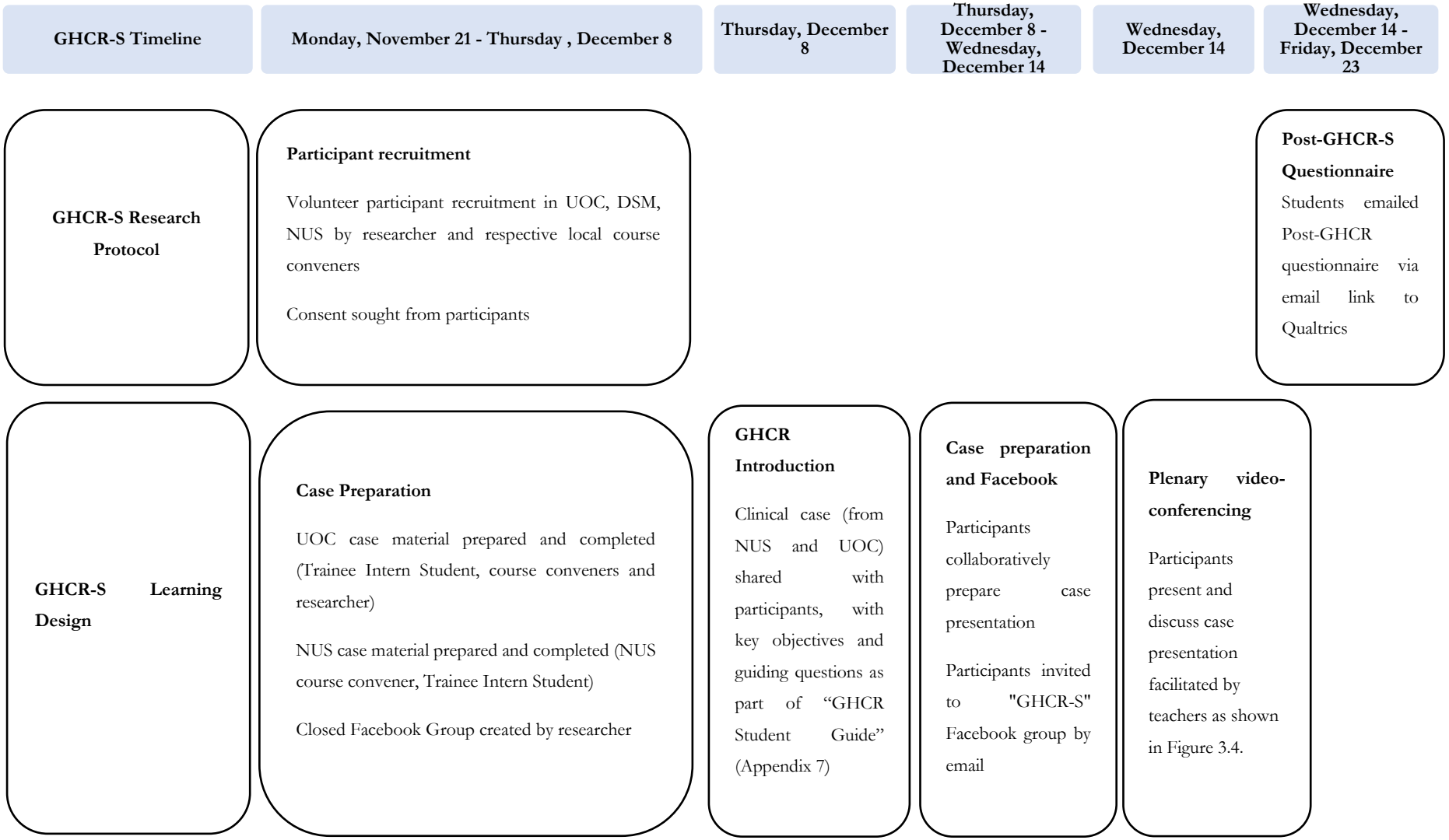


Figure 3.3. Timeline of GHCR-S Research Protocol and Instructional Methodology.

3.3.2.4.1 Preparation for GHCR-S plenary video-conferencing

OMS and NUS participants prepared a clinical case presentation which also contained relevant information on socioeconomic and cultural determinants of health. "Paediatrics infectious disease" was chosen by the course convenors as the case topic for the GHCR. OMS participants prepared a case on invasive meningococcal disease and NUS participants prepared a case on meningitis. Participants were provided with details on the presentation format in the "GHCR Summer Student Guide", which has been summarised below in Table 3.1.

Table 3.1. Summary of presentation format, number of students involved, and time allocated during presentation.

Question	**Student/s**	**Time and number of slides allocated for presentation**	**Total time and slides per presentation**
Case Presentation	Trainee Intern (Year 6)	15-20 minutes, 4-6 slides	
NZ/Samoa epidemiology of your case	1-2 students	1-2 minutes, 1 slide	
Description of referral system to secondary, and from secondary to tertiary care	1-2 students	1-2 minutes, 1 slide	
Preventive measures in Samoa/NZ related to the case from your country	1-2 students	1-2 minutes, 1 slide	25-30 minutes, 10-12 slides
Access to care	1-2 students	1-2 minutes, 1 slide	
Global consensus/guidelines on management of your case	1-2 students	1-2 minutes, 1 slide	
What should NZ doctors know when consulting Samoan patients and vice-versa?	1-2 students	1-2 minutes, 1 slide	

Both centres had participating Trainee Interns (Year 6 medical students) who were selected as "Lead Trainee Interns" to guide and support their group in preparing the case presentation. The Trainee Intern and participants also received guidance from the course convenors.

3.3.2.4.2 Closed GHCR-S Facebook group

To explore the potential role of Facebook in the GHCR, a closed GHCR-S Facebook group was created by the researcher and all participants were invited to join by email. To ensure appropriate use of social media, part of the consent form required agreement to abide by the "Social Media and Learning Guideline" (Appendix 2) which was produced as part of the project.

3.3.2.4.3 Plenary Video-conferencing

Zoom® was used as the video-conferencing platform because it allowed screen sharing and good connectivity despite low bandwidth. The decision to use Zoom® was made by consulting staff in the Information Technology Services, University of Otago.

The format for the plenary video-conferencing session is shown in Figure 3.4. The session was led by students and facilitated by course convenors based at UOC and NUS, and the researcher, who was based at UOC. The session began with introductions so students and teachers in the three centres (UOC, DSM and NUS) could become familiar with one another. Presentations were then made by each centre with time for two or three brief questions on the presentation. Presentations were followed by discussions, which covered specific points regarding the cases presented as well as the socioeconomic and cultural determinants of health relevant to the case. The total time for the plenary video-conferencing session was 90 minutes.

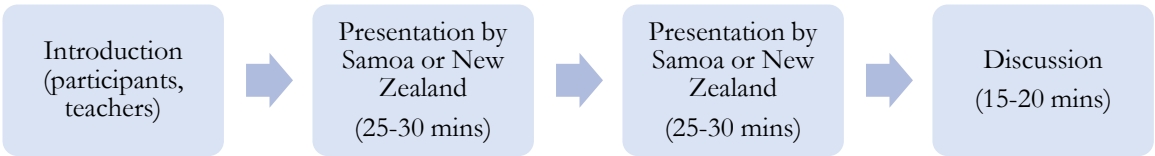


Figure 3.4. Format for plenary video-conferencing session for GHCR-S.

3.3.2.5 Post-GHCR-S questionnaire

The post-GHCR-S questionnaire had a range of Likert-scale and open-ended questions that explored the learning and experience of participants in the GHCR-S. Questions were derived by consultation with supervisors. The short time span of the summer studentship project did

not allow for in-depth literature review for validated questionnaires. Qualtrics® was used as the online survey platform because of its ease of use and survey distribution features. The link to the questionnaire was sent by email to all participants on the dates shown in Figure 3.3.

3.3.2.5.1 Data analysis

The quantitative data were analysed by descriptive analysis using Microsoft Excel 2016. The free-text answers were thematically analysed.

3.3.3 Results

3.3.3.1 Participants

Twenty-six medical students agreed to participate in the GHCR-S (Table 3.2). Of these, 13 were OMS medical students (3 based in DSM and 10 based in UOC) and 13 were NUS medical students based in Apia, Samoa. The New Zealand and Samoan groups were composed of a mix of students between Year 1 and Year 6. There were four Year 1-3 and nine Year 4-6 participants in each country group. It was necessary to include students of different year levels to reach an optimal number of participants in each country group. Overall, 96% of participants responded to the post-questionnaire (Table 3.3).

Table 3.2. Participant characteristics in the GHCR-S.

		New Zealand		Samoa	Total
		UOC	**DSM**	**NUS**	
Participants	Year 1-3	3	1	4	8
	Year 4-6	7	2	9	18
	Total	13		13	26

Table 3.3. Participant response to post-GHCR-S questionnaire.

		New Zealand		Samoa	Total
		UOC	**DSM**	**NUS**	
Post-GHCR-S questionnaire	Response	11		13	24
	Response rate	96%			

3.3.3.2 Reported learning in the GHCR-S

Learning of participants in the GHCR-S was explored in the post-GHCR-S questionnaire using Likert-scale and open-ended questions. UOC and DSM students have been grouped as the New Zealand group.

Overall, 65% (11/17) of participants strongly agreed and 35% (6/17) agreed that GHCR gave them an insight into the similarities and differences in presentation and care of infectious diseases between Samoa and New Zealand (Figure 3.5). None of the students indicated that they were neutral or in disagreement in response to this statement.

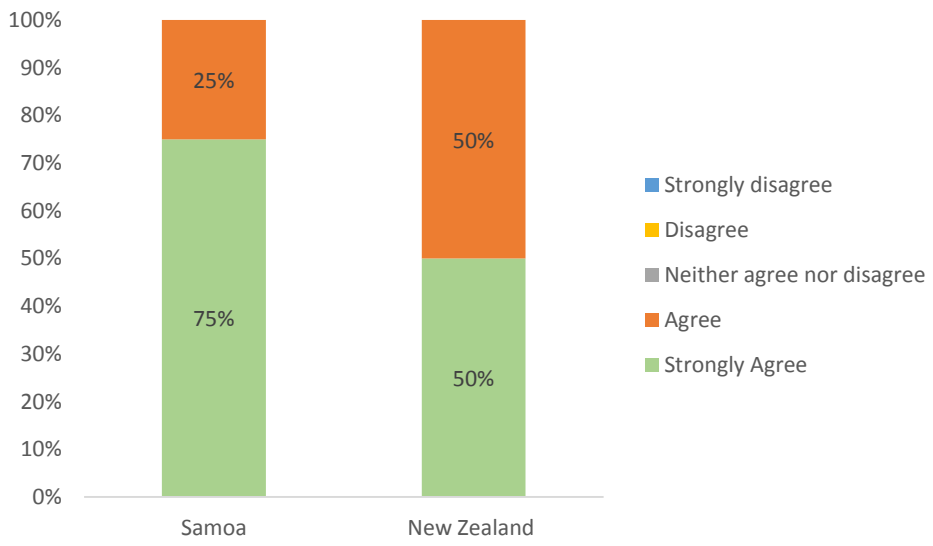


Figure 3.5. Response by country to post-GHCR-S Likert-scale question "GHCR-S gave me an insight into the similarities and differences in presentation and care of infectious diseases between Samoa and New Zealand".

Students reported learning about similarities and differences in presentation and care of infectious disease between New Zealand and Samoa referring specifically to:

- resource availability and the impact on management,
- differences in referral systems,
- differences in guidelines and degree of implementation of these guidelines.

Students showed increased awareness of culture and its impact on health as a learning outcome. The importance and value of traditional healers in Samoa was a learning point for many New Zealand participants.

The above reported learning outcomes are evidenced by the following quotations.

> *A lot of safety nets and guidelines that any or all doctors are able to follow. In Samoa, no safety nets, and guidelines are a bit outdated. So, this has encouraged me to try and make a change in trying to up the standards of medical care in hospitals in Samoa.* (Samoan student)
>
> *Limitations on resources such as radiology and lab tests in Samoa.* (New Zealand student)
>
> *Safe-netting and guidelines, and detailed public health follow ups [in New Zealand].* (Samoan student)
>
> *The role of traditional medicine in health care, the different doctor-patient relationship due to Samoan culture, how they attempt to follow Starship guidelines but limitations in their resource and available drugs.* (New Zealand student)
>
> *That traditional medical practitioners are considered to be part of the Allied Health Profession. This was very interesting and goes to show the extent to which how important traditional values are to the people of Samoa.* (New Zealand student)

3.3.3.3 Experience of participating medical students

Experience of participants in GHCR-S was explored by Likert-scale and open-ended questions in the post-GHCR-S questionnaire to understand:

- Was the GHCR-S experience positive or negative?
- What did participants most value in GHCR-S?
- What is the role of Facebook in the GHCR-S?
- What did students find challenging in GHCR-S? Any suggestions and changes for the future?

The majority of participants in the GHCR-S had a positive experience. Overall, 67% (12/18) of participants strongly agreed and a further 28% (5/18) agreed that participating in GHCR-S increased their interest in learning about global health (Figure 3.6).

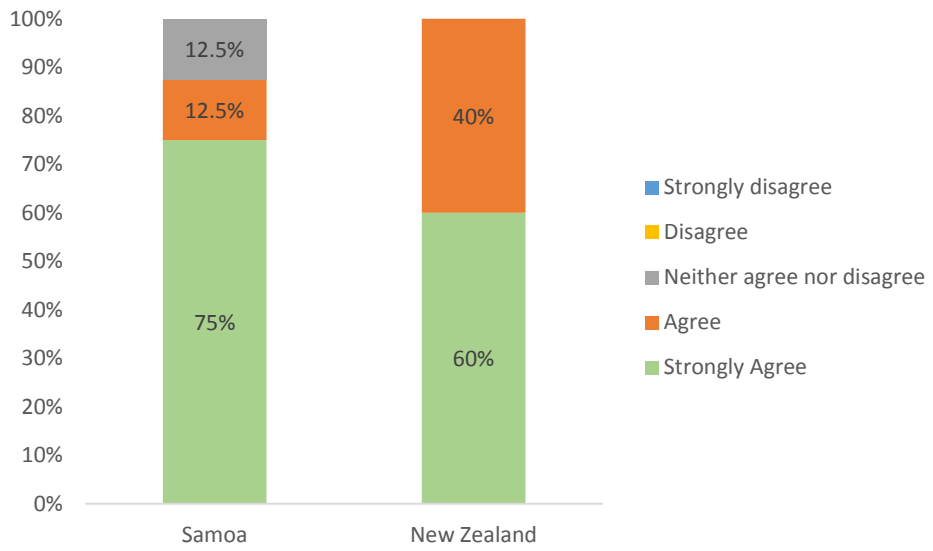


Figure 3.6. Response by country to post-GHCR-S Likert-scale question "Participating in the GHCR-S has increased my interest in learning about global health".

Positive comments were received from students regarding their overall GHCR-S experience:

> *Thank you. This classroom has provided me with a good insight and experience on what global health is about.* (Samoan student)
>
> *It was a wonderful experience and great initiative. Hopefully, I will be able to join in more of the classrooms in the future.* (Samoan student)
>
> *Overall an interesting and valuable experience, with great potential for future learning!* (New Zealand student)

Participants found the collaborative and interactive nature of learning about each other's healthcare system and culture valuable:

> *Was able to understand how our health system worked in comparison to NZ. Also, to communicate and share knowledge with medical peers from a different country.* (Samoan student)

Enjoyed the chance to interact with the other students in a more direct manner. (New Zealand student)

Team work and group effort. (Samoan student)

Learning from others. (New Zealand student)

The discussions in the plenary video-conferencing led to reflection for some students:

The discussions that were sparked by the case presentations and the learning and thinking that I've gone on to do as [resulted] in in my own reflection. (New Zealand student)

Active facilitation by teachers to clarify and add understanding to the discussion was also valued by students:

Also having a senior consultant around to give knowledge and answer our questions in the video-conferencing. (New Zealand student)

Samoa students commented that the unavailability of health data made preparing the case presentation challenging:

Not having available data or studies in Samoa. (Samoan student)

Well, trying to gain information from our health system, being that we have limited research and data on certain diseases. (Samoan student)

Participants in both countries found the connectivity issues tedious and annoying. The 90-minute session had poor connection on three occasions. The short-time frame of one week for researching and preparing the presentation also made the experience challenging:

I wish I could change our internet service so that presentation can be more efficient. (New Zealand student)

> *Trying to collaborate with and get to know other students in such a limited time frame, and also there were technical difficulties associated with the video conference.* (New Zealand student)
>
> *[One challenge] was preparing the slide on time.* (Samoan student)

When asked what participants would like changed for future GHCRs, the overwhelming response was better connectivity during video-conferencing. However, there was also an acceptance that this could not be completely controlled:

> *It would be amazing if the connection was better for videoconferencing of course but I imagine that is mostly out of our control.* (New Zealand student)

Participants suggested that the video-conferencing session needed to be more interactive by having more active facilitation by teachers and by students presenting in a more lively manner. More time for discussion was also suggested:

> *It would be great for students presenting to be a bit more interactive in their presentations, maybe allow a bit more time for questioning by the presenter to the group, like a friendly quiz while presenting. Liven up the presentation.* (Samoan student)
>
> *Perhaps more facilitation of discussion from a team leader, to get collaboration and conversation started. Also, ideally allowing more time for this to take place.* (New Zealand student)

An introductory video-conferencing session for students to get to know each other and be briefed on the task together was also suggested:

> *I think in the future a video-conference prior to the official starting of the project would be helpful, just for introductions so that students can see and have at least some knowledge on who they will be working with and to explain the purpose of the project what is hoped to achieve.* (Samoan student)

3.3.3.4 Role of Facebook in the GHCR

The role of Facebook in the GHCR was explored with Likert-scale and open-ended questions. Overall, 67% (14/21) of participants agreed, 28% (6/21) were neutral and 5% (1/21) disagreed that the collaboration via the closed GHCR Facebook group, prior to plenary video-conferencing, enhanced their learning (Figure 3.7).

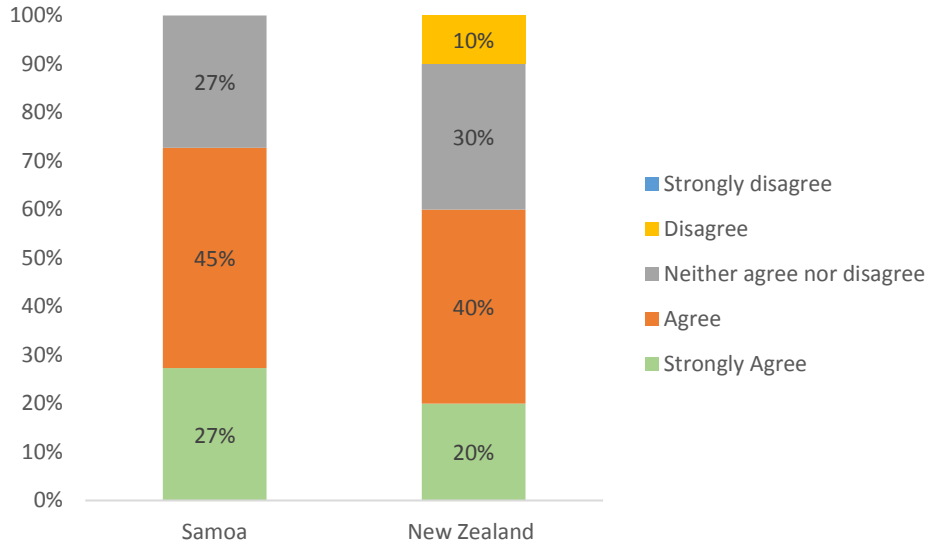


Figure 3.7. Response by centre to post-GHCR Likert-scale question "Collaboration via the closed GHCR Facebook, prior to the plenary videoconferencing, enhanced my learning".

Participants identified ease of sharing resources and asking questions had been helpful, but the short time frame limited the collaboration that could have taken place on Facebook:

> *I enjoyed the informal nature of learning, it allowed the tasks to be a more enjoyable experience. I think that I could have gained more out of it the project was over a longer period of time. I felt that it was slightly rushed and did not allow sufficient time for beneficial collaboration.* (New Zealand student)

> *Very convenient and easier to use medium to communicate and share ideas, as well as questions.* (Samoan student)

> *Good place for a quick chat and to share resources or bit of information about ourselves.* (New Zealand student)

Overall, 81% (17/21) of participants agreed and 10% (2/21) disagreed that they used the closed Facebook for getting to know medical students from the other medical school. Two participants were neutral in their response.

Participants enjoyed the collegial nature of the Facebook group which allowed them to introduce themselves and share photos of their school, hospital and environment. More time was suggested for the Facebook interaction.

> *It was interesting to see the pictures that different people shared and to enjoy a sense of collegiality with people across the world! I thought it was very valuable and would have loved to have had more time available to use the resource.* (New Zealand student)

> *We got to share knowledge of our campuses, what their library was like, etc. Also, we got to know some background information on some of the students as they posted photos of where they stayed. So, it was a good experience.* (Samoan student)

> *I enjoyed reading the introductions some members posted on the Facebook group, especially the photos from students in Samoa. But again, I don't think there was enough time to properly get to know the other members of GHCR.* (New Zealand student)

Shyness and unfamiliarity between the group members was a barrier for interactions to occur. This required participants to step outside their comfort zone and take the initiative to interact:

> *Takes you to initiate really. Not meeting people first hand is probably a barrier so just being forward with your introductions is a little awkward, but you just have to step up and do it.* (Samoan student)

> *Socialisation took a bit longer to get off the ground. I think this is mostly because many of us probably use Facebook more with those we already know from our lives, and so using it as a point of first meeting was a bit different and, for me, left me feeling more self-conscious of what I posted for other to get to know me. I really enjoyed reading all that the others posted but ended up not posting myself.* (New Zealand student)

When participants were asked whether they considered Facebook a helpful component for future GHCRs, the majority responded positively. Potential for using Facebook due to its user friendliness for getting to know each other, share resources and ask questions were highlighted as supporting points:

> *It's so much more convenient and user friendly, also good way to know overseas colleagues before commencement of classes.* (Samoan student)

> *Yes, I think the informal aspect would be a great way to enhance learning and promote collaboration and friendship between students. Facebook also makes it easy to share photos, videos, documents and quizzes which may be helpful.* (New Zealand student)

One participant who does not use Facebook, and so was not part of the Facebook group, discouraged the use of Facebook:

> *I do not encourage the use of Facebook for medical students, in general, as I feel that as future medical professionals, we need to be careful of how we represent ourselves online.* (New Zealand student)

Another participant expressed their concern regarding what would happen after GHCR-S concluded and uncertainty of boundaries regarding Facebook, a social media platform, being used as part of a learning activity:

> *Yes, definitely [helpful] in the lead up to the presentation. However, I'm not sure about the usefulness of it after the presentation. Also, a bit unclear on the boundaries. As most of us use Facebook to socialise and [have] personal photos and things on our Facebook it may not be the best avenue to do "business" like a global classroom.* (New Zealand student)

3.3.4 Discussion

3.3.4.1 Main findings

The main self-reported learning outcomes of participants in the GHCR-S were the similarities and differences in presentation and care of paediatric infectious diseases between Samoa and New Zealand, and topics such as resource availability, guidelines and culture that arose in the

presentation and discussion. The learning outcomes complement the original task of preparing and presenting the clinical case alongside relevant socioeconomic and cultural determinants of health.

Overall, participant experience in the GHCR-S was positive due to the interactive and collaborative nature by which students were able to learn about each other's healthcare systems and culture. Technical aspects such as connectivity during video-conferencing and limited time for research and preparation were identified as barriers to engagement. Suggested changes were to allocate more time for research and preparation, and for discussion during video-conferencing. An introductory video-conferencing session for students to get to know each other and be briefed on the objectives together was also suggested. The GHCR Learning Design in 2017 could incorporate an introductory video-conferencing component that enables social interaction between students. Future research could explore whether opportunity for social interaction in an introductory video-conferencing session in the GHCR enhances learning of participants.

Participants enjoyed the opportunity to get to know each other, share resources and ask questions in the closed GHCR-S Facebook group. Participants suggested the social interaction on Facebook enhanced the collegial relationship. Future research could explore whether opportunity for social interaction on Facebook in the GHCR enhances learning of participants. The short time frame of one week for participant interactions and the appropriateness of Facebook for use as part of a learning activity were highlighted as barriers to engagement.

3.3.4.2 GHCR-S study limitations

While the GHCR-S Research Project demonstrated that participants had an enjoyable experience and were able to learn about differences in Samoan and New Zealand healthcare systems and cultures, the results of this study must be interpreted in light of certain limitations. The four main limitations of this study are: volunteer bias, variability of year levels within participant group, only one participant sample, and that the study was conducted during a non-academic period.

Participants recruited for this study were volunteers and it is likely that this introduced volunteer bias, thereby challenging the external validity of the research findings. Participants were likely to have volunteered due to interest in global health, which may have resulted in overestimation of the knowledge acquired from GHCR-S, and only certain aspects of experiences and teaching may have been remembered. Furthermore, the researcher's acquaintance with many of the

participants may have introduced social desirability bias leading to greater agreement with statements.

To have an optimal number of participants in each country group, participants regardless of their year level in medicine were recruited. This means there were differences in knowledge and experience among and between the groups. It may also means questions were interpreted differently depending on year level in medical school and exposure to global health, leading to overestimation or underestimation of findings.

Additionally, the GHCR took place only once and was conducted during the non-academic time of the year when participants were either undertaking their Summer Studentship Projects or on holiday. These conditions are not comparable to the academic year where students would have competing demands such as clinical work, tests and assignments. Competing demands may influence the experience and learning outcomes of medical students. However, by undertaking the study without these external factors the learning design could be explored for its effectiveness. The next step would be to replicate the study with improvements during the academic year.

The GHCR 2017 Research Project will need to address these limitations by having a larger sample size, conducting it during the academic year and having consistency of participant year level within groups.

3.3.4.3 Summary

The GHCR-S Research Project demonstrated that students enjoyed the interactive and collaborative learning design of the GHCR which enabled learning of presentation and care of paediatric infectious diseases in Samoa and New Zealand, and relevant socioeconomic and cultural determinants of health.

Positive aspects highlighted by participants were:

- Active facilitation by teachers to clarify and add understanding was appreciated by students
- Learning design based on collaboration and interaction for global health learning was appreciated
- Discussion during plenary video-conferencing was considered very important to overall enjoyment and learning

- Opportunity for getting to know each other, share resources and ask questions via the closed Facebook group was appreciated and encouraged for future GHCRs

Suggestions and changes for future GHCRs as highlighted by participants were:

- More time for research and preparation
- Introductory video-conferencing session to allow students to get to know each other and be briefed on the objective of GHCR together
- Uncertainty regarding the use of Facebook as part of learning activity due to confidentiality and privacy issues. Further research is needed to answer questions regarding whether opportunity for social interaction could enhance learning in GHCR

  Regarding the plenary video-conferencing, suggestions were:
- More time for discussion
- More active facilitation by teachers
- Better connectivity
- Students need to be more interactive and lively in their presentations

Positive learnings and changes recommended by participants were trialled in the 2017 GHCR. The GHCR-S enabled the researcher to become familiar with the GHCR Learning Design helping to inform the BMedSc(Hons) Research Project.

Chapter 4: Global Health Classroom in 2017

In 2017, the GHCR was implemented at OMS, PAHS, and NUS (Figure 4.1). Only OMS and NUS have been included in this study due to the time constraints of a one-year time frame for the BMedSc(Hons) degree. The following section gives background information about OMS and NUS, and how GHCR was integrated into existing courses at each medical school, followed by the GHCR 2017 Learning Design.

Figure 4.1. GHCR in 2017 between UOC-PAHS, UOC-NUS and DSM-NUS. Data were collected from three UOC-DSM and two DSM-NUS GHCRs for this study (adapted from "Google Map: Nepal, New Zealand and Samoa" 2017).

4.1 Otago Medical School (OMS), University of Otago New Zealand

OMS is one of the two medical schools in New Zealand. It is the oldest medical school in New Zealand and was founded in 1875. OMS has a six-year medical curriculum and the first three years of medical studies, "Early Learning in Medicine" (ELM), are undertaken in Dunedin. ELM offers an integrated course based on various body system modules and core clinical cases.

Learning is based on modalities including experiential practice, lectures, small group discussions, and independent learning.

The final three years, "Advanced Learning in Medicine" (ALM), are undertaken in either Dunedin (DSM), Christchurch (UOC) or Wellington (UOW). ALM offers increased interaction with patients and is centred around clinical work in hospital wards and in outpatient clinics in teaching hospitals, in smaller rural hospitals and general practice. The final, trainee intern year is an apprenticeship-style year allowing students to assume greater responsibility in hospital wards and general practice. It also includes a three-month elective where students can undertake a research project or clinical work in another healthcare setting in New Zealand or overseas. The majority of Year 6 students go overseas for their elective and this is considered part of their global health learning experience.

Global Health Classroom in 2017 was integrated into the Year 5 Paediatrics Module at UOC and Year 4 Public Health Module at DSM.

4.1.1 University of Otago, Christchurch (UOC)

Year 5 medical students at UOC, typically around 110 of them, are split into eight groups and rotate through modules of varying length. GHCR was a component of the Paediatrics Module. The Year 5 Paediatrics Module is a 4-week long module which covers airway conditions, gastrointestinal problems, infectious diseases, growth and nutrition, heart problems and child protection.

Three out of the eight UOC groups were part of this study and have been referred to as UOC-A, UOC-B and UOC-C hereafter. UOC-A, UOC-B and UOC-C had 13 students each.

4.1.2 Dunedin School of Medicine, University of Otago, Dunedin (DSM)

Year 4 medical students at DSM are split into four groups of about 20 students each and rotate through modules of varying durations. GHCR was a component of the Year 4 Public Health Module. The Year 4 Public Health Module is a 3-week long module which covers population health, epidemiology, occupational health, Māori health, global health, Pacific health and health policy and systems.

Two out of the four DSM groups were part of this study and have been referred to as DSM-A and DSM-B. DSM-A had 20 students and DSM-B had 18 students.

4.2 School of Medicine, National University of Samoa, Samoa (NUS)

The School of Medicine (SOM) at the National University of Samoa (NUS) was established in 2013. Prior to this, the Oceania University of Medicine (OUM) offered a medical course consisting of a pre-clinical phase offered online and clinical phase in regional hospitals in Samoa. The SOM was established after the relationship between the Government of Samoa and OUM ended, and all OUM students transferred to SOM.

SOM has a six-year medical curriculum. Years 1 to 3 consist of an integrated course based on various body system modules and core clinical cases. Learning is based on a variety of modalities including experiential practice, lectures, small group discussions, and independent learning. Years 3-6 are based on clinical work in hospital wards and outpatient clinics in smaller rural hospitals, alongside components of public health and community medicine. Clinical students are considered part of the team and assumed to take responsibility in clinical tasks. The final year is an apprenticeship-style year allowing students to assume greater responsibility in hospital wards. Year 6 includes an elective component for students to undertake a project or clinical work overseas, however, due mainly to financial constraints many students choose to remain in Samoa during their elective period. This emphasises the need to develop global health learning opportunities without dependency on international field experiences.

SOM has a total 44 enrolled medical students in 2017, with five in Year 4 and five in Year 5. All Year 4 and 5 students (NUS-A) were part of GHCR 2017, and thus part of this study. NUS-A had GHCR with three UOC and two DSM groups in this study (Table 4.1).

Table 4.1. Number of students in each centre group. All Christchurch and Dunedin groups collaborated with NUS-A.

GHCR	OMS	NUS
UOC-NUS GHCR	UOC-A (13)[a] UOC-B (13) UOC-C (13)	NUS-A (10)
DSM-NUS GHCR	DSM-A (18) DSM-B (20)	NUS-A (10)

[a] Numbers in brackets indicate the number of students per group.

4.3 Participant selection

A census sample of students from each centre were selected to be participants in this study because they undertook the GHCR in the first half of the year. This enabled the researcher to prepare this thesis within the one-year time frame of the BMedSc(Hons) degree.

Consent was obtained from students in the three centres prior to their participation in this study. Ethics approval to recruit participants and conduct this study was sought and approved by the University of Otago Ethics Committee and National University of Samoa Research and Ethics Committee (Appendix 1). The ethical aspects of this study are presented in detail in Chapter 5: Methods.

4.4 GHCR 2017 Learning design

Two models of GHCR were used in 2017. Figure 4.2 shows the GHCR Model 1 and Model 2 Learning Designs, which were informed by the GHCR 2016 Pilot and GHCR-S findings. Model 1 was trialled in the UOC-NUS collaboration and Model 2 was trialled in the DSM-NUS collaboration (Table 4.2). GHCR Model 1 included the introductory video-conferencing and Facebook component, whereas Model 2 did not. Two models of GHCR were implemented to explore whether differences in student experience and learning would arise with the addition of the introductory video-conferencing and Facebook components.

Table 4.2. Summary of key similarities and differences between GHCR Model 1 and Model 2 (iVCR stands for introductory video-conferencing and pVCR stands for plenary video-conferencing).

GHCR Model #	**GHCR**	**Learning design**					
		Introduction to GHCR	Facebook	iVCR	Case preparation	pVCR	Debrief
1	UOC-NUS	√	√	√	√	√	√
2	DSM-NUS	√	X	X	√	√	√

UOC-NUS and DSM-NUS GHCR occurred on dates that fit the schedules of both centres and was agreed upon by course convenors usually three-four weeks prior to the GHCR (Table 4.3).

Table 4.3. Dates in 2017 for introductory video-conferencing (iVCR) for UOC-NUS and plenary video-conferencing (pVCR) for both UOC-NUS and DSM-NUS. DSM-NUS only had pVCR as part of their GHCR.

GHCR	iVCR	pVCR
UOC-A and NUS-A	Wednesday, 15 February	Tuesday, 21 February
DSM-A and NUS-A	-	Monday, 27 March
UOC-B and NUS-A	Wednesday, 12 April	Wednesday, 26 April
DSM-B and NUS-A	-	Monday, 8 May
UOC-C and NUS A	Wednesday, 10 May	Tuesday, 11 July

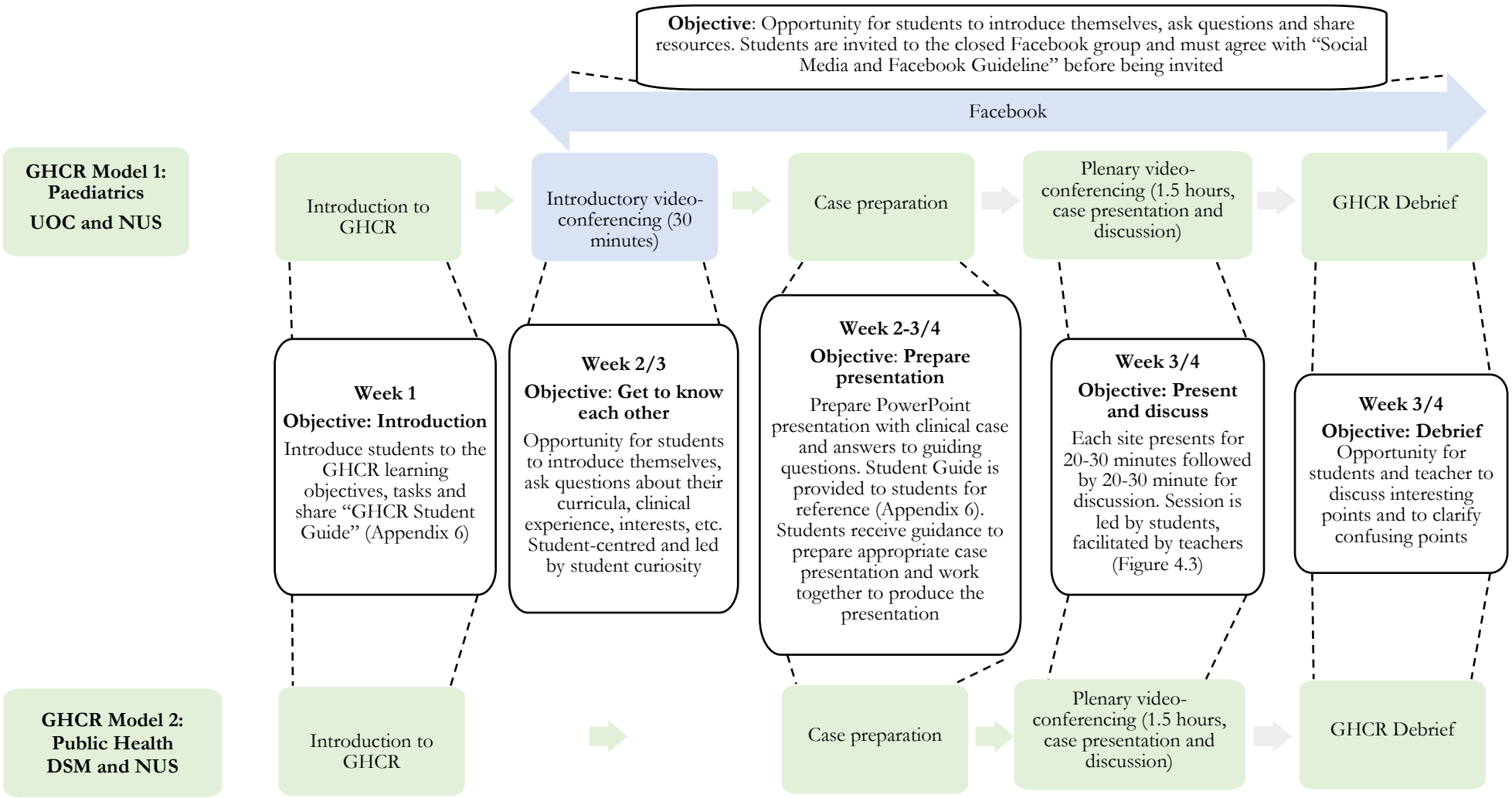


Figure 4.2. GHCR 2017 Learning Design showing Model 1 and Model 2. GHCR Model 1 was implemented between UOC-NUS. GHCR Model 2 was implemented between DSM-NUS. The main difference between Model 1 and Model 2 is the introductory video-conferencing and Facebook component.

4.4.1 Introduction to GHCR

Students were introduced to the GHCR objectives and tasks by their course convenors and received more information in the "GHCR Student Guide" (Appendix 6: GHCR Student Guide).

4.4.2 Introductory videoconferencing and Facebook

The key difference between Model 1 and Model 2 is that Model 1 offers the opportunity for social interaction in the introductory videoconferencing and Facebook component.

The UOC-NUS introductory video-conferencing in Week 1 or Week 2 was a semi-structured session for students to introduce themselves and ask questions about their respective medical schools, clinical experiences, interests and aspects of student life. The researcher and course convenors facilitated the session but encouraged students to lead the interaction.

The closed GHCR Facebook group for UOC-NUS gave an opportunity for students to continue their social interaction. The group was created for the UOC-NUS GHCR collaboration and students were invited after the introductory video-conferencing session (iVCR). The researcher created and moderated the Facebook group activity.

4.4.3 Clinical case and guiding questions PowerPoint preparation

Students prepared the case presentation with relevant global health themed guiding questions over one to two weeks with assistance as needed from their course convenors. The "GHCR Student Guide" (Appendix 6) contained specific information regarding what to prepare for the plenary video-conferencing and has been summarised in Table 4.4. DSM-NUS generally found a case with the same or similar condition to present to each other to highlight similarities and differences in case presentation, referral, management and underlying health systems factors.

Table 4.4. Summary of presentation format, number of students involved, and time allocated during presentation.

Question	Student/s	Time and number of slides allocated for presentation	Total time and slides per presentation
Case Presentation	1-2 students	15-20 minutes, 4-6 slides	
Epidemiology of your case	1-2 students	1-2 minutes, 1 slide	
Description of referral system to secondary, and from secondary to tertiary care	1-2 students	1-2 minutes, 1 slide	
Preventive measures related to the case from your country	1-2 students	1-2 minutes, 1 slide	25-30 minutes, 10-15 slides
Access to care	1-2 students	1-2 minutes, 1 slide	
Cultural awareness	1-2 students	1-2 minutes, 1 slide	
Anything else that your group found interesting (e.g. something new?	Optional	-	

4.4.4 Plenary Video-conferencing (pVCR)

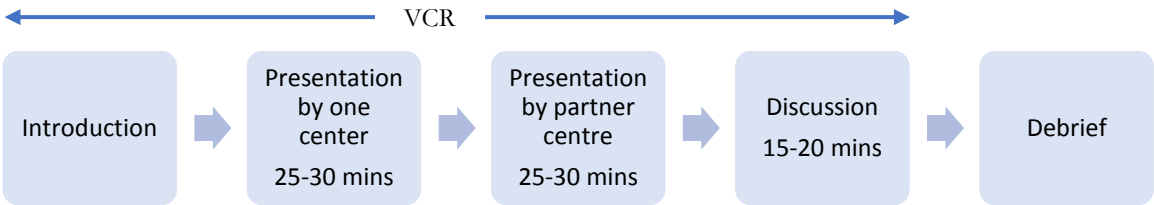


Figure 4.3. Format of the plenary-videoconferencing component in the GHCR (VCR: video-conferencing).

The plenary video-conferencing (pVCR) structure was unchanged from the GHCR-S apart from the addition of the off-line local debrief session at the end (Figure 4.3). Course conveners started the virtual classroom with group introductions and often an ice breaking activity (such as "Share something about your country"). Ground rules regarding the format of the classroom were outlined briefly by facilitators to ensure effective time management. The presentations and discussion were led by students (Figure 4.4). Facilitators guided aspects of the discussion to add and clarify understanding. The clinical cases that were presented in the UOC-NUS and DSM-NUS pVCR have been listed in Table 4.5. The total time for the plenary video-conferencing session was 90 minutes.

Figure 4.4. GHCR plenary video-conferencing session between NUS students (pictured) and UOC students (on screen). Students lead the virtual classroom with guidance from teachers.

Table 4.5. Clinical cases that were presented as part of the case presentation in the pVCR between UOC-NUS and DSM-NUS. DSM-NUS generally presented the same or similar clinical condition.

GHCR	Clinical case
UOC-A	Failure to thrive
NUS-A	Malnutrition
DSM-A NUS-A	Pelvic inflammatory disease
UOC-B	Enuresis
NUS-A	Neonatal sepsis
DSM-B NUS-A	Pancreatitis
UOC-C	Child with painful hip
NUS A	Neonatal jaundice

A suggestion from GHCR-S for a debrief component to be added to the learning design was taken into consideration and implemented in both models. The debrief component took place either at the immediate end of the plenary video-conferencing or when the class next met. Students and the course convenor talked through the key points of the video-conferencing session with emphasis on the global health concepts that emerged.

4.4.5 Video-conferencing technicalities

UOC-NUS introductory and UOC-NUS and DSM-NUS plenary video-conferencing sessions were conducted using Zoom®, as recommended by staff in the Information Technology Services, University of Otago for its screen sharing and easy-to-use features. A contingency plan for poor connectivity during video-conferencing was also established.

Chapter 5: Methods

This chapter presents the mixed-method research approach employed in this research, followed by the methods for collection and analysis of data. The chapter will conclude by describing how triangulation of data collected through the mixed-method approach was applied to synthesise the quantitative and qualitative data.

5.1 Aim and objectives of the research

The aim of this research project is to explore student learning and experience in the GHCR, and ascertain the key elements contributing to their learning and experiences. The objective is to determine the feasibility and success of the GHCR as a potential global health learning model. This study will address the following research questions to inform the overall aim. Question 3 arose from the GHCR-S (Section 3.3.4 Discussion).

1) What are the self-reported learning outcomes of medical students in the Global Health Classroom?
2) What are the self-reported experiences of medical students in the Global Health Classroom?
3) Does opportunity for social interaction via the introductory video-conferencing and Facebook component of the GHCR enhance learning in the GHCR?
4) What are the key elements of the GHCR contributing to the experience and learning of medical students in the GHCR?

5.2 Mixed method overview

This thesis employs a mixed methods design as described by Creswell (2003). Mixed methods research (MMR) is a relatively new study design and has developed only over the last 20 years. MMR refers to the intentional collection and analysis of different sources of both quantitative and qualitative information in the study of a subject area. MMR has been used in this study due to its strengths at a general, practical and procedural level (Creswell, 2003; Tashakkori & Teddlie, 2003).

At a general level, MRR has been chosen in this study to draw on the advantages of quantitative and qualitative research so the methods can be combined to optimise strengths and counter

non-overlapping weaknesses. This will give the depth and breadth to the research questions being explored in order to holistically generate new understanding (Creswell, 2003; Tashakkori & Teddlie, 2003). At a practical level, employing both methodologies provides more tools and instruments to understand a novel research field (Creswell, 2003; Tashakkori & Teddlie, 2003). At a procedural level, it provides a strategy to triangulate the data collected because different sources of data collected in MMR may help to establish their utility if they converge to demonstrate similar conclusions. If data sources converge to demonstrate different conclusion, that is also helpful to enhance understanding and identify future research areas (Creswell, 2003; Tashakkori & Teddlie, 2003). Thus, a MRR approach in this study allows the research questions to be approached from different theoretical and methodological angles, with more flexible and well-rounded investigative techniques (Madey, 1982; Onwuegbuzie & Leech, 2005).

The philosophical paradigm underpinning MMR is pragmatism, which "sidesteps the contentious issues of truth and reality" and "focuses instead on 'what works' as the truth regarding the research questions under investigation" (Tashakkori & Teddlie, 2003; Yvonne, 2009). Pragmatism considers there to be "singular and multiple realities that are open to empirical inquiry and orients itself toward solving practical problems in the real world", thereby allowing the researcher to be free of practical constraints imposed by the "forced dichotomy between postpositivism and constructivism" (Plano Clark & Creswell, 2011, p. 44; Yvonne, 2009, p. 8). Pragmatism was applied to this study because there are singular and multiple realities regarding the learning and experience of participants in the GHCR which arise out of "actions, situations and consequences rather than antecedent conditions" (Creswell, 2003). Furthermore, the pragmatic philosophy allowed for a systematic application of appropriate quantitative and qualitative methods to address each specific research question.

5.2.1 Types of Mixed Method Designs

MMR can be done by a number of different study designs. Creswell (2003) describes four main study designs including exploratory, explanatory, embedded and triangulation designs.

An explanatory study employs a two-phase design, beginning with collecting and analysing quantitative data and then using the findings to inform the collection of qualitative data. An exploratory study differs from explanatory in that the first phase of data collection is qualitative and the information is used to inform the collection of quantitative data. The embedded research design involves a single phase of data collection where the quantitative or qualitative data serves as the primary source of information and the embedded quantitative or qualitative

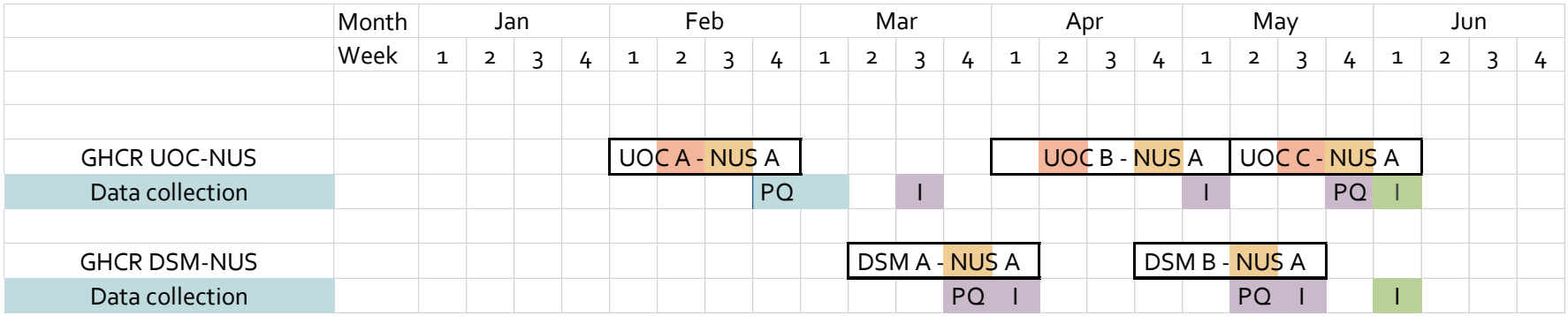
data serves as a support to the main type of data collection. This allows the embedded study design to answer questions that would not be answered by the primary source of data. The triangulation design involves concurrent collection of different sources of both quantitative and qualitative data that were then analysed concurrently. This study design provides different and complementary information about the same question by combing the strengths of each different data type, thereby increasing the breadth and depth of the research.

5.2.2 Triangulation Mixed Methods Approach to the Study

A triangulation MMR design was employed in this study because it provides different and complementary information about the same question by combining the strengths of each different data type, thereby increasing the breadth and depth of the research. The triangulation MMR design involved sequential collection of both quantitative and qualitative data for each GHCR. Each data set, quantitative and qualitative, is then analysed separately and then compared with other data sets to explore the similarities, discrepancies and interesting insights that emerged. The purpose of this analysis was to understand the complementarity and divergence that spanned the different sources of data regarding the themes and findings.

5.3 Data collection and analysis

This section describes how quantitative and qualitative data were collected in this study for each GHCR. Quantitative data were collected via the post-GHCR questionnaire. Qualitative data were collected via open-ended questions in the questionnaires and in-depth semi-structured interviews with a subset of participants (21). Figure 5.1 shows a Gantt chart of quantitative and qualitative data collection as it occurred for each GHCR included in this study.



Legend	
	Introductory video-conferencing
	Plenary video-conferencing
PQ	Post-GHCR questionnaire by UOC and NUS students
I	Interview of UOC/DSM students
PQ	Post-GHCR questionnaire by UOC/DSM students
I	Interview of NUS students after GHCR with all UOC and NUS groups

Figure 5.1. Gantt chart of quantitative and qualitative data collection in UOC, DSM and NUS. Note that NUS-A did the post-GHCR questionnaire only once. Interviews with NUS students were after they had had five GHCRs with the New Zealand groups.

5.3.1 Quantitative data collection and analysis

5.3.1.1 Questionnaire

A post-GHCR questionnaire (Appendix 4) was designed by the researcher to collect data regarding learning and experience of medical students in the GHCR using a range of Likert-scale, multiple-choice and open-ended questions. The questionnaire was adapted from the post-GHCR-S questionnaire used in the Summer Studentship Project to better encapsulate the objectives of this study. Time for literature review allowed for questionnaire used by Ambrose et al. (2017) to be consulted.

The learning based questions explored participant learning regarding patient care, health systems and challenges, culture and determinants of health. Learning regarding these concepts was sought because they are recommended in the global health education literature (Johnson et al., 2012; Peluso et al., 2017b) . The experience-based questions were designed to inform strengths and weaknesses about specific components of the GHCR Learning Design. UOC students and NUS students received questions specific to the introductory video-conferencing and Facebook component, whereas DSM students did not.

Qualtrics® was used as the online survey platform to create the online post-GHCR questionnaire because it was easy to use, secure, and funded by the University of Otago. Once the post-GHCR questionnaire was created on Qualtrics®, it went through several phases of review to ensure the questionnaire was aligned to the aims of this study. The questionnaire was generated so it could be completed on a laptop, as well as a smartphone, to encourage a high response rate from participants.

As shown in Figure 5.1, the post-GHCR questionnaire was distributed to all five New Zealand groups (UOC-A, UOC-B, UOC-C, DSM-A and DSM-B) and one Samoan group (NUS-A) group. NUS-A completed the post-GHCR questionnaire after GHCR with UOC-A only. The post-GHCR questionnaire was sent to participants via email after completion of the plenary video-conferencing session. Students were given two weeks following GHCR to complete the post-GHCR questionnaire.

5.3.1.2 Descriptive quantitative analysis

Quantitative data arising from UOC, DSM and NUS were descriptively analysed using SPSS Version 23 in a two-phase process, firstly, centre-specific analysis and then centre-combined analysis (Figure 5.2). Data from Likert-scale questions were treated as categorial data.

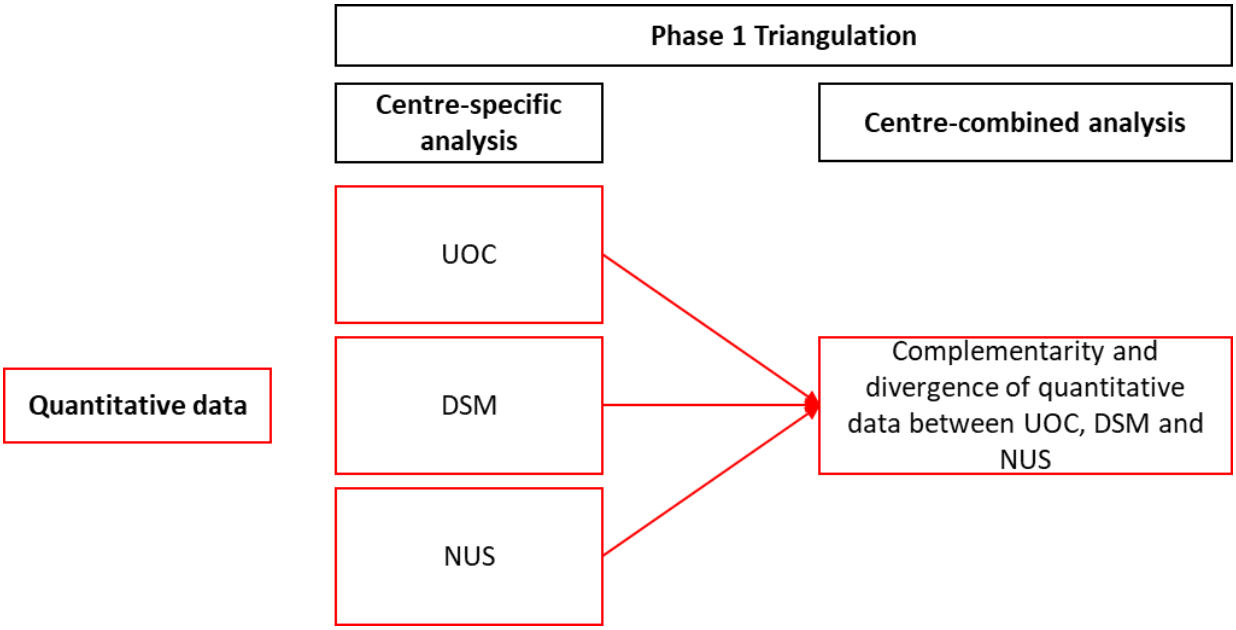


Figure 5.2. Two phase descriptive analysis of quantitative data.

Centre-combined analysis was done to determine whether data between centres were different or complementary. Rule A and Rule B were established for this purpose after data collection phase and before any statistical significance testing was undertaken. Centre-specific quantitative data sets were considered different and reported if they met Rule A or Rule B:

Rule A (statistical difference between centres)
Chi-square p-value ≤ 0.05

Or

Rule B (practical difference between centres)
At least one centre <70% positive agreement (agree, interest, yes) regarding statement
and, Absolute difference between centre is $\geq 30\%$

In Rule A, the chi-square test was used to find out whether there was a significant difference between the expected frequencies and the observed frequencies with responses in each centre. The chi-square test was used because it is a robust test that does not require equal sample sizes in each group (McHugh, 2013). Chi-square testing was undertaken using SPSS Version 23. The null hypothesis states that there is no difference between centres. If p-value ≤ 0.05, then there is considered to be strong statistical evidence for difference between centres. If p-value ≥ 0.05, then there is considered to be little statistical evidence for rejecting the null hypothesis, i.e. weak statistical evidence for difference between centres.. However, statistically significant evidence for difference between centres is not the same as practical (or practically relevant) difference between centres; thus, Rule B was established. Centre-specific quantitative data has only been reported if there was divergence between centres for the specific data set (i.e. Rule A or Rule B have been met).

5.3.2 Qualitative data collection and analysis

Qualitative data was collected in this study from the in-depth semi-structured interviews and supplemented with open-ended questions in the post-GHCR questionnaire.

5.3.2.1 Open-ended questions in questionnaires

The open-ended questions in the post-GHCR questionnaire were based on understanding the learning and experience of participants in the GHCR. Questions were particularly focused on exploring what students valued and suggested regarding the GHCR Learning Design. Students responded using free text.

5.3.2.2 In-depth semi-structured interview

Interviews are commonly used in qualitative research and the type of interview chosen depends on the purpose of the study. Semi-structured qualitative interview was selected for this study. Semi-structured interviews are characterised by Edwards and Holland (2013) as "a list of questions or series of topics (interviewers) want to cover in the interview, an interview guide, but there is some flexibility in how and when the question are put and how the interviewee can respond." Semi-structured interview was chosen as the most appropriate qualitative instrument to explore specific aspects of learning and experience of participants in the GHCR while providing flexibility to explore themes raised during the conversation (Bryman, 2012).

The interview process used in this study is consistent with the process described by Creswell (2003): identifying interviewees; selecting type of interview; using adequate recording procedures; designing an interview guide; refining the interview questions after pilot; determining the setting for the interviews; obtaining consent; and keeping to the interview guide.

5.3.2.2.1 Participant selection for interview

Participants for the semi-structured interviews were selected by non-probability random sampling. The random sampling was conducted by administrators in UOC and DSM, and course convenor in NUS. Selected participants were emailed and requested for interview. If the participant accepted the request, then the setting and time was confirmed. If the participant declined the request, the reason was sought and noted, and the next randomly selected participant was requested for interview. Interviews were conducted until data saturation was cumulatively reached in each centre. With the exception of NUS-A, interviews were conducted with participants in two UOC and two DSM groups.

Individual interviews were used instead of group interviews because it gives participants greater privacy to express their learning and experience in the GHCR without the fear of embarrassment and alienation from peers. Additionally, some participants may be more vocal than other participants negating the exploration of subtle and tacit themes that could arise.

5.3.2.2.2 Interview setting

All interviews were conducted face-to-face by the researcher being physically present for the interview. UOC and DSM participants were interviewed within two weeks after completion of their GHCR. The researcher travelled to Dunedin in April and May 2017 to undertake interviews with the DSM participants. NUS participants were interviewed in May 2017 after they had had GHCR with the five New Zealand groups (UOC-A, UOC-B, UOC-C, DSM-A and DSM-B). The researcher travelled to Samoa in May 2017 to undertake interviews with NUS participants.

5.3.2.2.3 Interview guide

The interview guide (Appendix 5) was designed to explore learning and experience of participants in the GHCR. The interview guide was developed with guidance from supervisors and piloted with two medical students who had participated in the GHCR Summer Studentship

Project. These pilot interviews also served as practice for the researcher. Only minor changes were made to the interview guide after the pilot. The interview was designed to be approximately forty minutes in length.

5.3.2.2.4 Interview procedure

Interviews were conducted by the researcher. Following a brief statement of the objectives of the research, and a verbal run through of the consent form (Appendix 3) and signing, a check of the recording equipment was made. Interviews were recorded using a digital recording device. Participants were encouraged to express their perspectives and ideas openly and comfortably, and to seek clarifications or prompts to questions when they needed.

The interview followed a semi-structured process guided by the interview guide. There were six main question stems and this structure was followed loosely to maintain flow of ideas and perspectives in the conversation. Open-ended questions were asked as outlined in the interview guide and participants were encouraged to talk freely and at length with direction by the interviewer kept to a minimum. The researcher maintained the purpose of the interview by guiding the conversation if necessary and made field notes concurrently to act as a reminder of areas for clarification and follow-up. At the end, the researcher specifically asked if the interviewee had any ending comments to make or to share any thoughts or ideas that may not have arisen in the interview. It was very rare for interviewees to share anything more and most suggested that they had shared more in the interview than they had initially anticipated.

Following the first few interviews, the researcher reviewed the tape and transcript and received feedback from supervisors regarding interview technique. Minor modifications on technique, such as maintaining a longer silence period after questioning to give time for interviewee to think, and content of interview guide were made as result of this feedback.

Later interviews became more targeted, especially when similar material to previous interviews arose. This was especially the case in understanding the importance and process of collaborative learning, and suggestions for improving the GHCR Learning Design. Later interviews allowed the researcher to discuss in-depth the emerging themes relating to learning and experience of GHCR, for example "Could you please explain what you mean by learning about differences in patient care?" and "What influence did the introductory video-conferencing have on your overall experience of the GHCR?".

Interviews were conducted in each centre until data saturation was reached. Guest, Bunce, and Johnson (2016) describe data saturation as the number of interviews "needed to get a reliable

sense of thematic exhaustion and variability within [their] data set". Saturation was often reached by five interviews in each centre but at least one or two more were done. Furthermore, interviews were collected with different centre groups to ensure representability of the data being collected. In UOC and DSM interviews were conducted in two groups respectively (UOC-A, UOC-B, DSM-A and DSM-B) until data saturation was reached.

5.3.2.2.5 Interview transcription

The audio file was transferred from the recording device to the researcher's computer as soon as possible after the interview. The audio file was transcribed by either the researcher or staff member of the Department of Pathology, UOC. The researcher transcribed the first four interviews and a staff member in the Department of Pathology, UOC transcribed the remaining interviews. Audio files were anonymously named (i.e. Participant 1) by the researcher and then shared in a USB which was kept secured when not in use. Both the researcher and staff member had an agreed upon format for transcribing. According to Tilley (2003), researchers often neglect to give consideration to the interpretative nature of transcription, particularly if they are not undertaking the transcription process themselves. In acknowledgement, "Researcher" and "Participant" to determine the speaker, the use of apostrophes and commas and "…" representing where one or more words have been omitted, were used as part of the transcribing format. Filler words such as "ermms" and "ahhs" were not transcribed as a means of keeping the conversation flowing.

5.3.2.2.6 Interview transcript thematic analysis

In this research project, thematic analysis was chosen as the appropriate qualitative analysis technique for three reasons. First, the purpose was to understand the complexity in participants' learning and experiences given the variability of the participant demography in terms of location, year group, culture and pre-conceived ideas and assumptions. Second, the analysis included a process of repeated cycles of "immersion" with the data, whereby the researcher was able to actively read to understand the meanings and patterns relating to participants' experience and learning to develop thematic insights (Braun & Clarke, 2006). Thirdly, descriptive thematic analysis has been known to be particularly useful "when you are investigating an under-researcherd area, or you are working with participants whose views on topic are not known" (Braun & Clarke, 2006).

Thematic analysis, as described by Braun and Clarke (2006), was chosen to analyse the interview transcripts. Similar to the quantitative analysis, the thematic analysis was a two phase procedure,

firstly, centre-specific analysis and then centre-combined analysis to triangulate complementarity and divergence of themes between centres (Figure 5.3). Braun and Clarke (2006) advocate a six-step process for that include familiarising yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

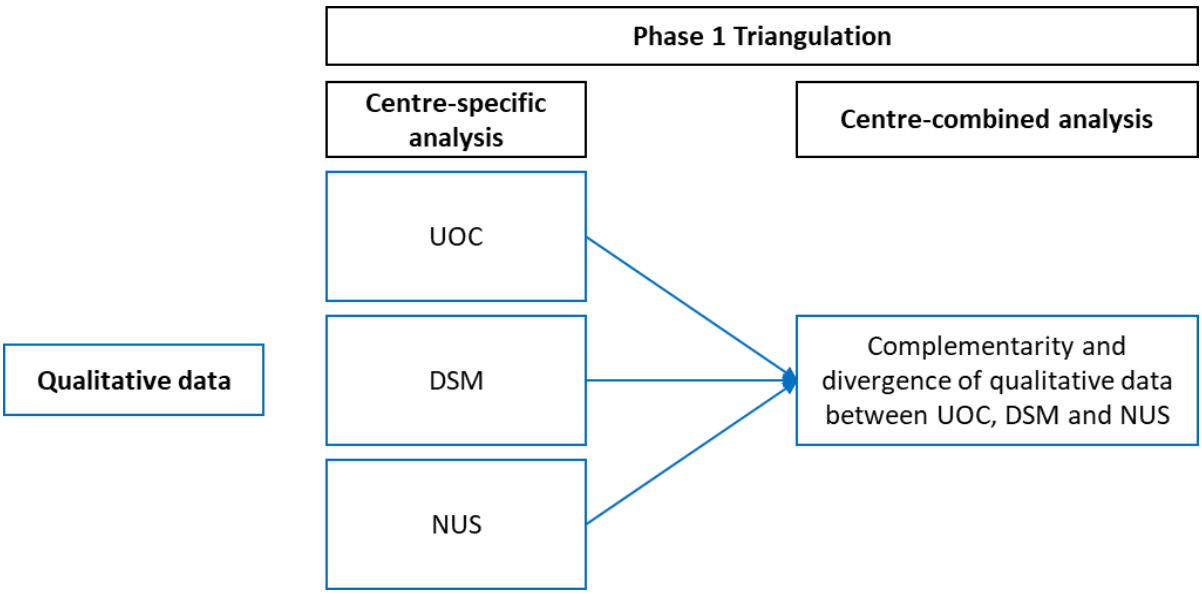


Figure 5.3. Two phase thematic analysis of qualitative data.

Field notes and themes from the open-ended questions in the questionnaire and interviews were analysed recursively throughout the data collection phase. After each interview was transcribed, the researcher read through the transcripts and compared them to the interview recording to become familiar with the data. Ensuring concordance between the recording and transcription, and familiarisation with the data was especially important because the researcher did not undertake all the transcription.

Coding was used to make sense of the qualitative data and to extract coherent themes. In the initial coding stage, each interview transcript was read line by line by the researcher to determine and assign specific codes arising from the interviews. A "code" refers to the label that the researcher assigns to an idea or concept that emerges from the data (Braun & Clarke, 2006; Creswell, 2003).

All centre-specific qualitative data was thematically analysed independent of the qualitative data arising from the other centres. Then, the core themes arising from each centre where compared

to determine the convergence and divergence in the emerging themes. List of themes that were similar and different were created. Some themes were broadened or narrowed to better encapsulate the data.

5.3.3 Mixed Method Triangulation approach to Data Mixing

This thesis used a mixed method triangulation approach for data analysis. A two-phase triangulation procedure was undertaken in this study (Figure 5.4). As outlined before, the first phase involved analysis for complementarity and divergence of quantitative data arising from UOC, DSM and NUS; and the same for the qualitative data.

The second phase consisted of synthesising the quantitative and qualitative data. This was done by selecting themes from the qualitative analysis to support the quantitative findings, to form an overall theme. For example, Question 7 from the post-GHCR questionnaire "GHCR gave me insight into the differences in presentation and care of a common medical condition between Samoa and New Zealand" was informed by qualitative codes such as "patient referral process", "investigations for medical condition" and "treatment protocol", and together these formed the "Patient care" theme.

Major quantitative findings that were supported by qualitative themes have been reported. Whether a quantitative finding or qualitative theme, or both, have been reported is made explicitly clear in Chapter 6: Results (Table 6.4 and Table 6.7)

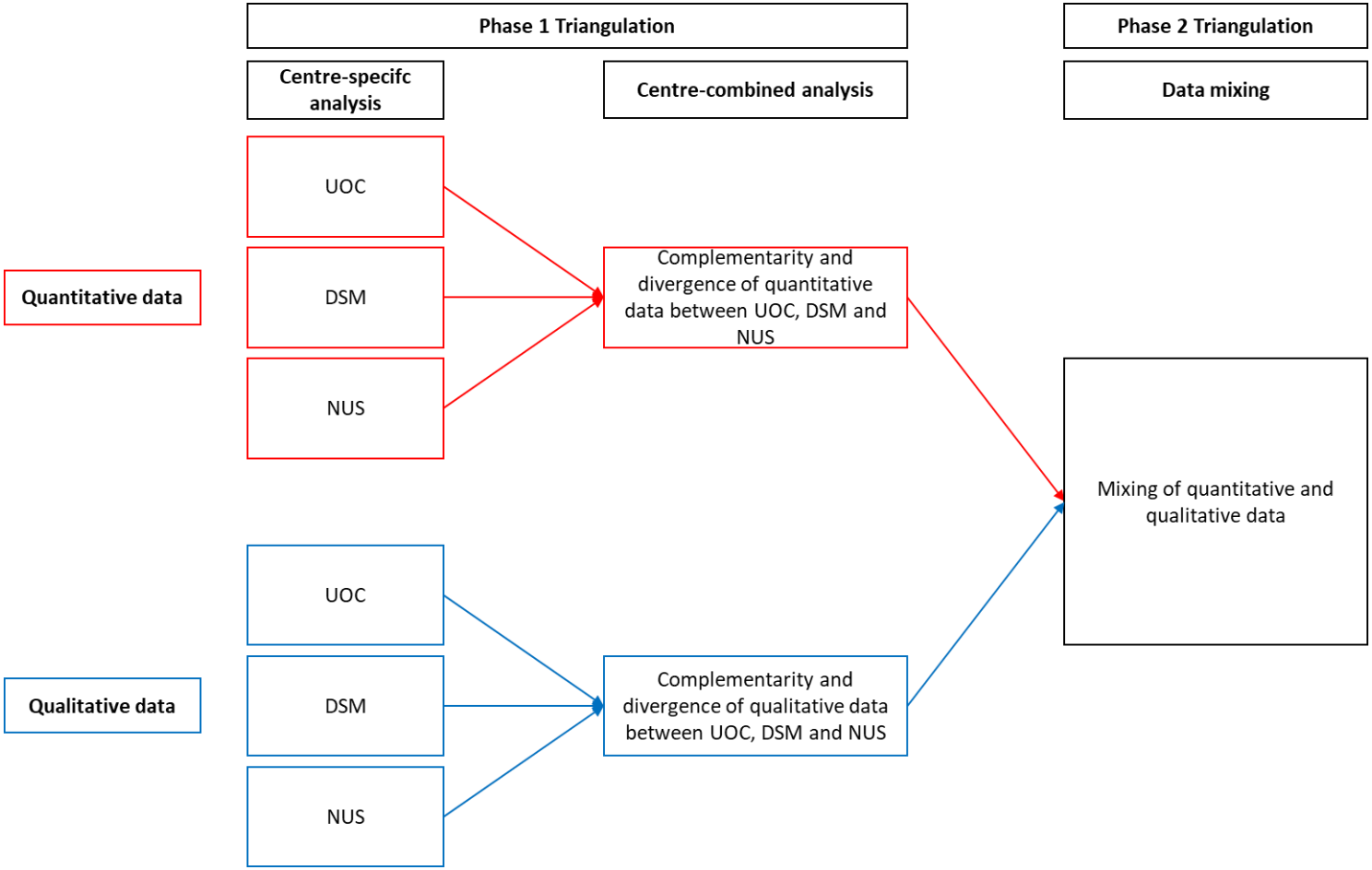


Figure 5.4. Phase 1 and Phase 2 triangulation approach to data mixing.

5.3.4 Storage and use of data

All physical documents (consent forms, printed copies of questionnaires and transcripts) were securely stored. Audio files on the recording device were deleted after transferring to the Researcher's computer. Qualtrics was only accessed by the Researcher and was password protected. Any data files downloaded from Qualtrics were stored in the Researcher's computer which was password protected.

5.3.5 Ethical aspects

The ethical considerations were:

- Informed consent
- Privacy

In accordance with the University of Otago Ethics Committee guidelines and consultation with Academic Committees Office, an Ethics Category B Application was sought and approved in December 2016. This was further amended and approved in February 2017 (Appendix 1). Ethics approval was also sought and obtained from the Research and Ethics Committee at the National University of Samoa (Appendix 1).

All UOC, DSM and NUS students that participated in the GHCR during the first half of 2017 had the opportunity to become participants in this research. Not all students were participants in the research. No judgement or disadvantage occurred for students who did not participate in the research. Participants in the research did not receive any preferential treatment or advantage in the course of any kind. These points were clearly documented in the consent forms for participants.

Due to the geographical range of the study, consent from students was sought by either emailing or providing a printed copy of the "Information Sheet for Participants". NUS students were asked to electronically type their name and date on the Consent Forms and email back to the researcher. This was done to reduce the logistical challenge and ensure high uptake of participants.

UOC and DSM students were provided printed copies of the "Information Sheet for Participants". In UOC, the consent process was carried out at the start of the Year 5 Paediatrics

Module, as part of their introductory session on the first day. In DSM, the consent process was carried out when GHCR was introduced to the students in Week 1 of their Public Health Module. The Researcher undertook the consent process in Christchurch, whereas in Dunedin this was carried out by the course convenor. The physically signed consent forms were then collected by the Researcher and secured.

The questionnaires were all anonymous and Qualtrics was only accessed by the researcher. Consent was sought again for participants that accepted to be interviewed. This was done primarily to remind participants of the purpose of the research and provide an opportunity for questions and clarifications. The nature of the interviews meant that personal and sensitive disclosure by participants was not likely to occur. Personal or identifying information in interview transcripts were generalised to maintain anonymity, for example names of specific people were changed to "Course Convenor" or "Family member" as appropriate.

Chapter 6: Results

This chapter presents the findings of the post-GHCR questionnaires and interviews with medical students in UOC, DSM and NUS. The remainder of the chapter will explore the research questions.

6.1 Participants, response rate, and characteristics

6.1.1 Post-questionnaire completion rate and characteristics

Across all centres, there was a response rate of 85% (74/87) to the post-GHCR questionnaire and, by centre, ranged from 100% at NUS to 82% at UOC (Table 6.1).

Table 6.1. Response to the post-GHCR questionnaire.

Centre	Centre group	Group response to post-GHCR questionnaire	Overall centre response rate
UOC (39) [a]	UOC-A (13)	13	
	UOC-B (13)	10	82% (32/39)
	UOC-C (13)	9	
DSM (38)	DSM-A (20)	20	84% (32/38)
	DSM-B (18)	12	
NUS (10)	NUS-A (10)[b]	10	100% (10/10)

[a] Numbers in brackets indicate the number of student/responses per group.
[b] NUS A completed post-GHCR questionnaire with UOC-A only.

In total, there were 37 Year 4 and 37 5 students who responded to the post-GHCR questionnaire. All UOC students were Year 5 and all DSM students were Year 4. There were five Year 4 and Year 5 NUS students (Table 6.2).

Table 6.2. Post-GHCR questionnaire responses by year level and centre.

Centre	Year 4	Year 5
UOC	0	32
DSM	32	0
NUS	5	5
Total	37	37

6.1.2 In-depth semi-structured interviews

Nineteen interviews were conducted in total, of which six were with UOC students, seven with DSM students and six with NUS students (Table 6.3). No interviews were conducted with participants in the UOC-C group because data saturation had already been reached by the sixth UOC interview. The interview length ranged from 22 to 53 minutes, with a mean time of 36 minutes. Four DSM students declined to be interviewed, three due to competing demands (i.e. assignments and tests) and one due to work commitments.

Table 6.3. Interview selection and group.

Centre	Centre group	Interviews
UOC (39) [a, b]	UOC-A (13)	2
	UOC-B (13)	4
	UOC-C (13)	0
DSM (38) [b]	DSM-A (20)	5
	DSM-B (18)	2
NUS (10) [c]	NUS-A (10)	6

[a] Numbers in brackets indicate the number of students per group.
[b] UOC and DSM interviews were undertaken after GHCR with NUS-A.
[c] NUS-A interviews were undertaken after GHCR with all five New Zealand groups (UOC-A, UOC-B, UOC-C, DSM-A, and DSM-B).

Quotations from participants will follow the format of "Location of the student, participant number", that is, a DSM student will be referred to as "Dunedin Student 4" and a UOC student as "Christchurch student 6", and so on. Participant number is not indicated if the quote arose from the open-ended questions in the post-GHCR questionnaire.

6.2 What are the self-reported learning outcomes of medical students in the GHCR?

Knowledge, attitude and skill competencies relating to global health emerged as themes regarding the learning of medical students in the GHCR. Knowledge and attitudes were major themes and skills a minor theme. Themes were supported by either quantitative, qualitative, or mixed forms of data (Table 6.4). Knowledge was supported by quantitative and qualitative data, whereas attitude and skill were supported primarily by qualitative data. Table 6.5. Knowledge theme supported by quantitative data. Table 6.5 and Table 6.6 show the quantitative data categorised into the theme they support.

Table 6.4. Themes and subthemes regarding the self-reported learning of medical students in the GHCR were supported by quantitative and/or qualitative data.

Theme	Subtheme	Quantitative	Qualitative
Knowledge	Patient Care	√	√
	Culture and impact on health	√	√
	Health system and impact on health	√	√
	Determinants of health	√	√
	Medical terminology		√
Attitude	Respect and cultural understanding		√
	Curiosity and interest	√	√
	Reciprocity		√
	Humility		√
	Reflection		√
	Vision for progress		√
Skills	Communication		√
	Research		√

Legend

Christchurch and Dunedin

Christchurch, Dunedin, and Samoa

Samoa

Table 6.5. Knowledge theme supported by quantitative data.

Theme	Subtheme	Post-GHCR questionnaire statement	Rule A[a]	Rule B[b]	Likert-scale data (%)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Knowledge	Patient care	7. GHCR gave me insight into the differences in presentation and care of a common medical condition between Samoa and New Zealand.	0.018	84-100	Christchurch (n=32)	19%	66%	12%	3%	0%
					Dunedin (n=32)	26%	61%	13%	0%	0%
					Samoa (n=10)	80%	20%	0%	0%	0
					Overall (n=74)	30%	58%	11%	1%	0%
	Health systems and impact on health	10b) Participating in the GHCR increased my understanding of the following aspects of global health, with regards to the other country: health system and impact on health outcomes.	0.270	81-100	Overall (n=72)	21%	65%	10%	4%	0%
	Determinants of health	10a) Participating in the GHCR increased my understanding of the following aspects of global health, with regards to the other country: socioeconomic and environmental impact on health.	0.013	58-100	Christchurch (n=31)	23%	58%	16%	3%	0%
					Dunedin (n=31)	6%	52%	19%	23%	0%
					Samoa (n=10)	50%	50%	0%	0%	0%
					Overall (n=72)	19%	54%	16%	11%	0%

	10d) Participating in the GHCR increased my understanding of the following aspects of global health, with regards to the other country: barriers to accessing healthcare.	0.445	84-100	Overall (n=72)	33%	56%	8%	3%	0%
	11b) The GHCR experience increased my understanding of the importance of knowing about: the determinants of health.	0.038	68-100	Christchurch (n=31)	7%	61%	19%	10%	3%
				Dunedin (n=31)	17%	58%	6%	19%	0%
				Samoa (n=10)	50%	50%	0%	0%	0%
				Overall (n=72)	17%	58%	11%	13%	1%
Culture and impact on health	10c) Participating in the GHCR increased my understanding of the following aspects of global health, with regards to the other country: cultural diversity and impact on health.	0.029	67-100	Christchurch (n=31)	26%	65%	6%	3%	0%
				Dunedin (n=31)	12%	55%	23%	10%	0%
				Samoa (n=10)	60%	40%	0%	0%	0%
				Overall (n=72)	25%	57%	12%	6%	0%
	11c) The GHCR experience increased my understanding of the importance of knowing about: how culture and health interact at a global level.	0.051	77-100	Overall (n=72)	26%	54%	13%	6%	1%

[a] Rule A = Statistical difference between centres when p-value ≤ 0.05, underlined when Rule A is met.
[b] Rule B = Practical difference between centres when at least one centre has <70% positive agreement (strongly agree and agree combined), and absolute difference between centre is ≥ 30% regarding the statement. Centre-wise lowest agreement % to highest agreement %, underlined if Rule B is met.
[c] Centre-wise percentage only given if Rule A or Rule B, or both, are met.

Table 6.6. Attitude theme supported by quantitative data.

Theme	Subtheme	Post-GHCR questionnaire statement	Rule A[a]	Rule B[b]	Likert-scale data (%)					
					Location	Greatly increased	Increased	Neutral	Decreased	Greatly decreased
Attitude	Curiosity	4. Participating in the GHCR has _____ my interest in learning about global health.	0.018	84-100	Christchurch (n=32)	9%	63%	25%	0%	3%
					Dunedin (n=32)	6%	41%	47%	6%	0%
					Samoa (n=10)	30%	60%	10%	0%	0%
					Overall (n=74)	11%	53%	32%	3%	1%

[a] Rule A = Statistical difference between centres when p-value ≤ 0.05, underlined when Rule A is met.
[b] Rule B = Practical difference between centres when at least one centre has <70% positive agreement (greatly increased and increased combined), and absolute difference between centre is ≥ 30% regarding the statement. Centre-wise lowest agreement % to highest agreement %, underlined if Rule B is met.
[c] Centre-wise percentage only given if Rule A or Rule B, or both, are met.

6.2.1 Knowledge

Knowledge emerged as one of the central learning themes in the GHCR. This theme encompasses knowledge of patient care, health systems, culture and medical terminology. Except medical terminology (refer to Section 6.2.1.5), all others were supported by quantitative and qualitative data. Learning of health systems and culture was interlinked with patient care, and it was often difficult to separate these subthemes. Patient care refers directly to individual-level care whereas health system and culture refer to systemic factors. Medical terminology is an independent subtheme.

Both Samoan and New Zealand students gained knowledge about patient care, health systems, and culture, in each other's country. Interestingly, Samoan students also gained knowledge about their own country too:

> *It was an eye-opener for me. Global health classes made me do the research around my own country.* (Samoa student 21)

6.2.1.1 Patient care

Patient care refers particularly to management of common medical conditions in New Zealand and Samoa and the patient-centred care model.

6.2.1.1.1 Management of common medical conditions

Of the participants, 88% agreed that the GHCR gave them insight into differences in presentation and care of common medical conditions between New Zealand and Samoa. There was a statistical difference between centres (p-value=0.018), but not a practical difference (Question 7, Table 6.5). Figure 6.1 shows that agreement ranged from 100% among Samoan students to 85% among Christchurch students. Of the neutral responses, 12% were Christchurch students and 13% were Dunedin students; 3% of Christchurch students disagreed with the statement.

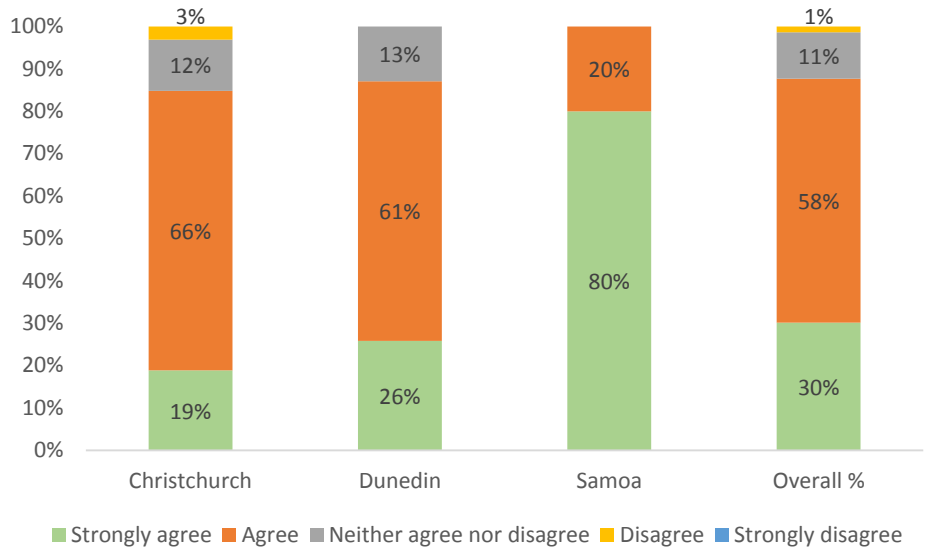


Figure 6.1. Response by centre to post-GHCR Likert-scale question "GHCR gave me insight into the differences in presentation and care of a common medical condition between New Zealand and Samoa."

Learning of differences in care and presentation of common medical conditions between New Zealand and Samoan was specific to the referral systems, investigations, treatment, discharge, and follow-up of the patient. Students often took this a step further to reflect on their own clinical scenario and practice.

6.2.1.1.1.1 Referral system

Samoan students commented that they gained knowledge about their country's referral system as a result of preparing their clinical case presentation, and also about New Zealand's referral system from primary care to tertiary care, for example:

> *I didn't know the proper way we do things [regarding patient referral], how we refer from which area to which area, but that's one thing I really like, I now understand how it goes, [how the patient is] referred from which area to which area.* (Samoan student 16)

> *I now know the referral system for New Zealand and their health system, that's the main thing I have learned the health system.* (Samoan student 18)

For referral system, I know that you guys, you have to have GPs, and then if it needs more investigations or more treatment, you refer them to the hospital. (Samoan student 18)

Referral system could have been explored under the subtheme of health system and impact on health, however, it has been explored here because the learning was in the context of a specific clinical case.

6.2.1.1.1.2 Investigations

Students commented on the difference in investigations, sometimes relating to resource availability, and how that may influence patient care, for example:

I guess the resource constraint is quite a big thing to keep in mind of things they would like to do but can't because it is more difficult for them. That just being able to order the test, that makes it a lot easier on us I guess, than for them, they will [have] more diagnostic uncertainty which kind of came through in the case. (Christchurch student 7)

The other one I was looking at was the last one [case of a child with hip-joint pain] because if it was in our setting, it will be a whole different set of investigations that would be carried through. (Samoan student 15)

6.2.1.1.1.3 Treatment

Samoan students often compared the differences in treatment in Samoa and New Zealand, and how that may reveal aspects of patient care that could improve:

Also another thing that I like was comparing the treatments, the local treatments, and the NZ treatment, it's really good to have a look at what we are doing compared to that [New Zealand treatment], not to point fingers that we are not doing a better job, but to know that there's room for improvement. It's really good; I really like it. (Samoan student 16)

Dunedin students often commented that they were seeing the same treatment plan being repeated back to them. This may be because the DSM-NUS GHCR chose cases with the same medical condition to present to each other:

I think it would have been far more interesting if we had two cases that had contrasted and maybe had like exemplified part of the country or the culture. It was just the same information, from the same source, being told back to us because they use the same guidelines, and they use the same antibiotics, and they use very similar things. (Dunedin student 1)

6.2.1.1.1.4 Discharge and follow-up

Students discussed the differences in discharge and follow-up protocol between New Zealand and Samoa, and how this related to patient care and resource availability:

It is the care that New Zealand provides on discharge and the follow-up strategies, and the prevention is really good. Regarding when you compare it to us, here it's somewhat very simple. It's just a one-off appointment, you don't have the community integrated care, but New Zealand puts [resources] into the patients in terms of follow up and constant reviews. (Samoan student 15)

Their care was the same in the hospital, but when we talked about the follow up, obviously we have all the extra support services around us from community nurses, and different services available, like breastfeeding group, and Plunket [society that provides support services for the development, health and wellbeing of children under 5], and all that. I don't know if they don't have it or they just don't mention it, but it didn't seem that there was a lot of outreach services or anything like that. So, it seems, [there's] a difference in an overall care for their patients and all those obviously got to be resource based. (Christchurch student 11)

Christchurch students commented on how easily a patient in Samoa could self-discharge from clinical care compared to New Zealand:

I found the self-discharge really interesting because we don't have a lot of that here, and it was obvious she done it twice [self-discharge], the patient in their case. So that was really interesting, and just how they work alongside, and they didn't seem that disgruntled by it. (Christchurch student 8)

6.2.1.1.2 Care model

The patient-centered care model in New Zealand was a major learning point for Samoan students. Students commented that the New Zealand case presentations illustrated this:

> *I mean the cases really highlight how patient-centered the care is for the patients in New Zealand.* (Samoan student 15)

For Samoan students, learning of the patient-centered care was based on easy access to care, especially primary care, and how this affected epidemiology:

> *So, looking at how patients centered it is, looking at access, it's easy for people to access care there because you have GPs and just see how widespread, it's really not centered in one place, it's everywhere in New Zealand, so people have that access to a GP.* (Samoan student 14)

> *And how patient centred the system is, see looking at especially primary care, because it's not what we have here, we are not with primary health care, so just seeing how that is a big thing in New Zealand and how it affects the epidemiology as well, you can see that the incidences long way in this country because we can see how NCDs is a big problem here, but it's not a problem, it's not the same in New Zealand.* (Samoan student 14)

6.2.1.2 Health system and impact on health

Overall, 85% of students agreed that GHCR increased their understanding of health system and impact on health outcomes, with regards to the partner country. There was no statistical nor practical difference between the centres regarding this statement (Question 10b, Table 6.5). Samoan students discussed their learning of New Zealand's health system confidently; this may be related to their having had five GHCRs at the time of the interview:

> *I think we know New Zealand health system inside out.* (Samoa student 21)

Students showed insight into the differences in the health system between New Zealand and Samoa, and how that may impact on health outcomes:

> *And it was interesting to get an understanding of what our health system, what we have in place in New Zealand in comparing with Samoa, and I was able to*

think about some of the challenges they have, and how that must have a huge impact on their health. (Dunedin student 4)

But it's really looking at the health system because we can see how, I think if it wasn't for global health class, we wouldn't know how bad or how good our health system is. (Samoa student 16)

It was so interesting learning about how there isn't really a primary health care system like we have in New Zealand. (Dunedin student)

6.2.1.2.1 Health system limitations

The notion of health care limitations was met with shock, surprise and interest for Samoan and New Zealand students:

Everybody was shocked that New Zealand has to refer cases to overseas as well. (Samoa student 17)

Things are really different just in terms of the amount of doctors they have who can service areas, like learning there were only three doctors for an entire population of people on one of their Islands was mind-blowing in a sense. (Dunedin student 12)

6.2.1.3 Determinants of health

Overall, 73% of students agreed that the GHCR increased their understanding of socioeconomic and environmental impact on health, with regards to the other country. There was a statistical and practical difference between centres. (Question 10a, Table 6.5). All Samoan students agreed with this statement, while 81% of Christchurch students and only 58% of Dunedin students agreed with this statement (Figure 6.2). The low agreement among Dunedin students may be because the clinical cases (Pelvic inflammatory disease and Pancreatitis) they discussed with Samoan students did not promote learning regarding this statement.

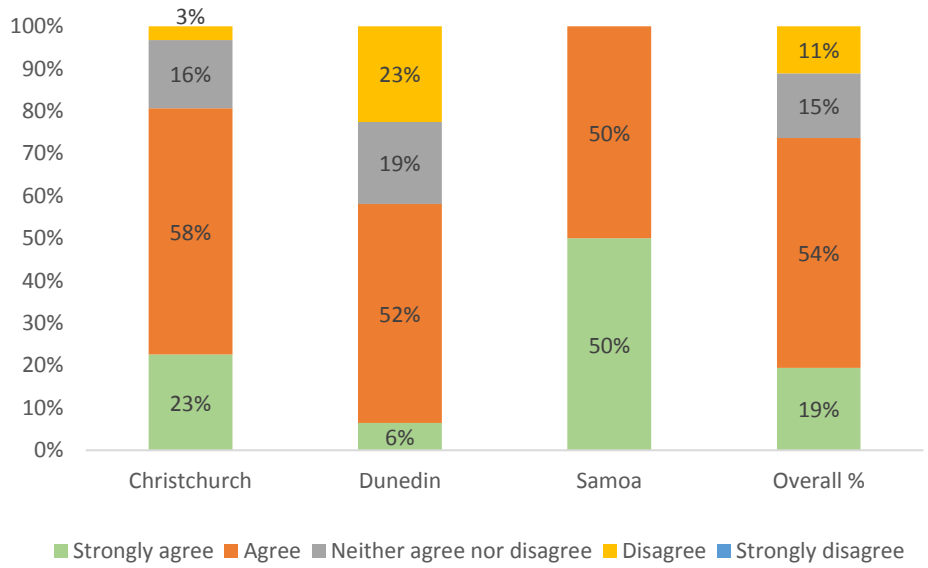


Figure 6.1. Response by centre to post-GHCR Likert-scale question "Participating in the GHCR increased my understanding of socioeconomic and environmental impact on health, with regards to the other country."

Students commented on the commonality of socioeconomic determinants of health and barriers to accessing healthcare in New Zealand and Samoa:

> *Main insight was the differences in the healthcare systems, and what the different things are in different countries that are the main determinants of health. I guess also the striking similarities- even though NZ and Samoa seem a world apart, both struggle with access to healthcare, education around healthcare and inequity in health.* (Christchurch student)

Overall, 89% of students agreed that the GHCR had increased understanding of barriers to accessing healthcare, with regards to the other country. There was no statistical or practical difference between centres (Question 10d, Table 6.5). Students reported learning about barriers to accessing healthcare regarding the accessibility and affordability of healthcare in New Zealand and Samoa. Samoan students showed increased understanding of barriers to accessing healthcare in both countries, while New Zealand students showed increased understanding with regards to Samoa.

Relating to accessibility:

> *In Samoa, the public transport, they close at 5.00pm, they don't [work] 24 hours. Not everyone owns private transport, that's another point. Plus, if you are on the other island, Savai'i*[5]*, the ferries only run from 6.00am until 4.00pm, so if you are really, really sick at around 6.00pm and up to midnight, you pray until it's 6.00am in the morning, and then you can get access to care to the main hospital. So, it's really hard, it's really hard if you put it that way.* (Samoa student 21)

> *I learned practical things about the Samoan health system, the logistical side of how Samoan patients have to get to the hospital and how that can be difficult.* (Dunedin student 1)

New Zealand students expressed that they expected Samoa would have barriers to accessing healthcare, but that the GHCR had helped them to understand it better:

> *I suppose like the access to care in more developing country, like I knew that it would be tougher for the Samoan patients to get to the hospital but didn't actually realise how much of a barrier it is for them.* (Christchurch student 9)

All Samoan students stated that they had gained comprehensive knowledge about Samoa's minimum wage and how that influenced health-related decision making as a result of preparing the clinical case presentations. New Zealand students also expressed learning about affordability as a barrier to accessing healthcare in Samoa, but not as comprehensively as Samoan students.

[5] Savai'i is the second biggest island in Samoa with a population of 43,000.

The minimum wage here is around 2.30 Samoan tālā per hour, so on average someone would earn 100 tālā a week. And in Samoa, a household around six members, so if those six members include parents with four kids, and those kids need school fees, lunches, not missing out on the...not forgetting the water bill and everything, it can blow that 100 tālā in a day, and that's something to think about for Samoa. (Samoan student 19)

*I learned other practical things about how they pay for their system. (*Dunedin student)

We talked about a little bit later, but how obviously they had to pay for their healthcare and doing all those treatments, they are all paying for that. (Christchurch student 6)

As a result of gaining knowledge into the barriers to accessing healthcare, and socioeconomic and environmental impact on health in New Zealand and Samoa, 75% of students agreed that the GHCR experience increased their understanding of the importance of knowing about the determinants of health. There was a statistical and practical difference between the centres (Question 11b, Table 6.5). Agreement to this statement ranged from 67% among Christchurch students and 74% among Dunedin students to 100% among Samoan student (Figure 6.2).

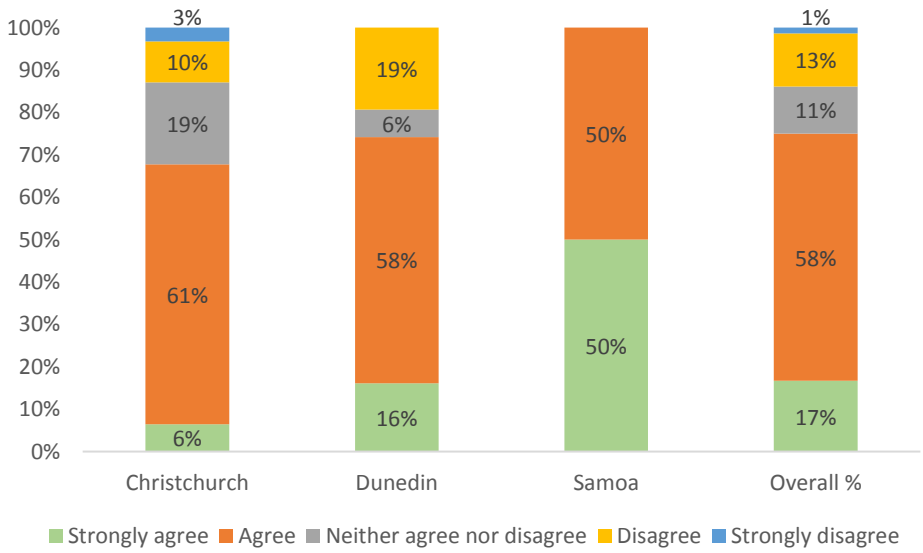


Figure 6.2. Responses by centre to post-GHCR Likert-scale question "The GHCR experience increased my understanding of the importance of knowing about: the determinants of health."

6.2.1.4 Culture and impact on health

Overall, 82% of students agreed, 13% were neutral, and 6% disagreed that the GHCR increased their understanding of cultural diversity and its impact on health. There was a statistical and practical difference between the centres (Question 10c, Table 6.5). Agreement ranged from 68% among Dunedin students to 100% among Samoan students. Of the neutral responses, 23% were Dunedin students and 6% were Christchurch students. Of the 6% of students who disagreed with the statement, 10% were Dunedin students and 3% were Christchurch students (Figure 6.3).

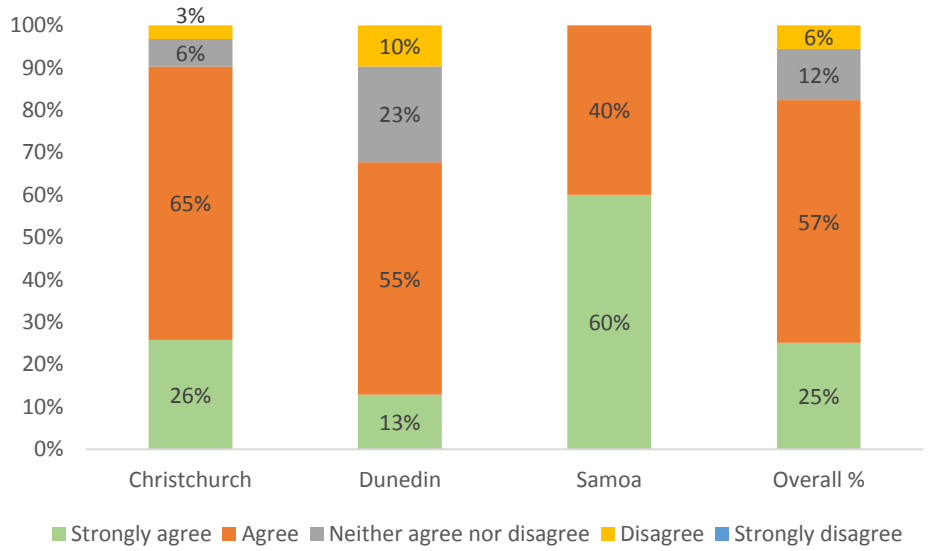


Figure 6.3. Responses by centre to post-GHCR Likert-scale question "Participating in the GHCR increased my understanding of the following aspects of global health, with regards to the other country: cultural diversity and impact on health."

New Zealand students often commented on specific cultural learning about Samoa, for example, the difference in acceptability of discussing sensitive issues and social hierarchy:

> *We were talking about sexually transmitted infections. And their willingness to talk about that, I sort of found that we as New Zealanders were a lot more relaxed and were OK with speaking about those things than they perhaps were.* (Dunedin student 3)

> *Also, when they talked about that in the survey, they found that 41% of people believed that they should be allowed to refuse sexual intercourse with their partner if they have STI*[6]*. I mean that was just a really weird thing to hear, and it sort of demonstrated a really different set of cultural values and expectations around sexual intercourse between partners and consent.* (Dunedin student 4)

Upon reflecting on their learning of culture and health in Samoa, New Zealand students also went on to discuss health challenges relating to specific cultural groups in New Zealand:

> *I think we have problems with these things, like the drinking culture in students. I think there is … also problems … in the rural community where there is a lot of depression [among] rural men. And there is a lot of stigma around talking about depression.* (Dunedin student 4)

Several New Zealand students started with the assumption that the Samoan students would be similar to Samoans living in New Zealand, and were often quite surprised when they saw the difference, for example:

> *I think it was different to what I was expecting, for a start. And I don't know, I actually thought, this might make me sound like an idiot, but I actually thought "Ah, it will just be like people, you know, like the Samoans [that I know] in New Zealand, who are actually like quite Kiwi-Samoans." And, but it was quite different still, you know, they have, they still have very strong cultural beliefs, and I think that came through … just even the way they did their presentation, the things they were prepared to talk about, you know because we were talking about sexually transmitted infections.* (Dunedin student 3)

As a result of gaining knowledge about culture and impact on health, 80% of students agreed, 13% of students were neutral, and 7% disagreed that GHCR increased their understanding of the importance of knowing about culture and health interactions at a global level. There was no statistical or practical difference between the centres (Question 11c, Table 6.5). For some students, this increase in understanding was related to having increased awareness of one's own culture, for example:

[6] Sexually transmitted infections

> *I think every time that you are made aware of your own culture makes you realise how important culture identity and systems are.* (Dunedin student 1)

6.2.1.4.1 Traditional healers

The role of traditional healers, their acceptance, and normality in Samoa, was commented on by all New Zealand students. This learning of relationship between traditional healers and patients, and the possibility of modern medicine being considered an alternative form of medicine, given the high number of traditional healers in Samoa offered a new perspective to New Zealand students, for example:

> *I found it very interesting [about] the traditional healers in Samoa and the trust in healing and just the ways to go about interacting with the Samoan patients. (*Christchurch student 9)

> [Samoa has] *a lot more traditional healers than there are consultants. There was the role of the traditional healers. It's interesting. It must be a strange dynamic to work in … I wonder what that feels like for medical students when you are not in the mainstream, you are the alternatives.* (Christchurch student 11)

Samoan students gained a greater understanding of what traditional healers do and why patients might visit them. This also interlinks with the theme of "Respect and cultural understanding" in attitudinal learning:

> *I have tried to understand our traditional healers; they are more caring … we can give them sort of payment but in forms of goods, food, instead of the hospital way you have to pay your transport and then you need money for the rest of the family, and then you pay to be seen and pay for your medication, while for traditional healers the medicine is herbal*. (Samoan student 16)

New Zealand students commented that learning about Samoan culture, particularly about traditional healers, would help them engage better with patients of Samoan origin:

> *I was still really surprised that in Samoa, traditional healers are so prominent. So, now knowing that information and you come and see people that are newly moved here from Samoa, which is quite common in New Zealand, you see a patient you don't understand why they are not taking their antibiotics, and if it was a European Kiwi, the reasons behind that will be very different to the reasons behind that for a Samoan. Because maybe they only ever had traditional healers.* (Christchurch student 8)

> *Being engaged and really thinking about other cultures and it was really useful because we have a lot of Samoans in New Zealand. They are the highest percentage [50%] of the Pacific Island community.* (Dunedin student 3)

6.2.1.5 Medical terminology

For many students, this was the first time they were learning virtually with international peers. New Zealand students were interested to see that the medical terminology and frameworks used in a clinical case presenting were similar, for example:

> *It was just interesting to hear the Samoan students present their case. We had lots of similar things, so we obviously talked [using] quite similar frameworks, like they presented the case with SOCRATES [7]and it was kind of written that way.* (Dunedin student 5)

> *Like when the person was presenting a case, he presented it in the exact same way we would, and I was like, "Ah, that's cool, we are in this club together".* (Dunedin student 13)

The realisation of this commonality in medical communication, with the initial assumption that it might be different, was often perceived to be judgemental upon reflection by the New Zealand students. This commonality in medical terminology was reassuring to students because it showed similarity in knowledge level between New Zealand and Samoan students:

[7] Mnemonic acronym used for pain assessment: site, onset, character, radiation, associations, time course, exacerbating/relieving factors and severity.

So, it was quite cool just seeing the similarities and differences because I wasn't really sure how they were going to present a patient, and this sounds really rude and stupid, but I wasn't sure whether they were going to use the Calgary Cambridge model of healthcare to present a patient, and it was quite nice seeing that they did. And it was quite reassuring because it was like if I ever went there, our skills are quite on par, and I know that sounds really really rude, but it was very cool to see where their learning is at, compared to where our learning is at, and to find that there is a lot of crossover is to be expected but that was really cool, and I wasn't sure what to expect on that front. (Christchurch student 8)

6.2.2 Attitude

Attitude refers to qualities that influence one's thinking and behaviour. Although, knowledge has been *attained* in the GHCR, certain attitudes were *influenced* by the GHCR, notably respect and cultural understanding, curiosity, reciprocity, humility, reflection and vision for progress. Humility and reflection were specific to New Zealand students and vision for progress was specific to Samoan students.

6.2.2.16.2.2.1 Respect and cultural understanding

New Zealand students held the Samoan students and health professionals in high regard after learning about them:

I was overall very impressed with their way of communicating and it was interesting to see people that were of a comparable education level to us … appeared to be at a far higher clinical level than we were. And I know that the teaching would be quite different in Samoa and possibly they do far more clinical teaching than we do. (Dunedin student 1)

I was really impressed with how much dedication [and] work a lot of doctors and medical personnel put in over there. I just thought the work ethic was great. (Dunedin student 12)

Samoan students showed greater appreciation for their doctors after learning about how relatively well resourced New Zealand's health system is:

> *Then knowing what New Zealand has and what we have, and the work that we do … to appreciate what they actually do. So that was one thing I was really happy with, that I got to appreciate my people on the work that they are doing.* (Samoan student 16)

New Zealand students expressed that learning from other countries could help improve their local system:

> *So, if we are able to spend more time listening to how things are done in other countries, I think that would increase our appreciation of what we have got here. And maybe change our mind about some of the things that we do for the better, and we can also help other people of course.* (Christchurch student 7)

New Zealand students often commented that they wanted to ask specific cultural questions but were aware that it may be culturally insensitive to do so. The quote below shows a Dunedin student not asking a question specific to sexually transmitted diseases because they felt it would be too culturally sensitive:

> *There was no mention of that [high rates of gonorrhoea] in their culture. I really wanted to ask but I felt it was rude. So, does that not happen in their culture? Is it not talked about? Is it illegal? But I just felt like a question was just too rude, so I didn't. I did think it was quite a sensitive topic … sexually transmitted infections are spread, and one of the major risk factors is having more than one sexual partner … And I sort of wanted to say, well, why do you have such a high rate? So, what is actually going on in your society that you are not perhaps talking [about] … So, I mean those were some kind of burning questions, but I really felt like, I don't know these people, I didn't have enough of a rapport or relationship.* (Dunedin student 3)

Sometimes discussion required students to be sensitive but informative in answering questions from their peers. For example, when a Samoan student asked New Zealand students why there was difference in health statistics for Māori [8] and Pākehā [9] in New Zealand:

[8] Indigenous people of New Zealand
[9] Māori language term for non-indigenous people of New Zealand, particularly those of European descent.

> *It was when they asked, "Why is this such a big difference between Māori and European, or Māori stats?" and everyone looks at each other and how do you answer that question?* (Christchurch student 6)

The discussion following the question above led to New Zealand students briefly talking about the Treaty of Waitangi and colonisation and its effects.

Samoan students often showed a change in perspective and greater understanding of barriers to accessing healthcare for Samoan patients, particularly as it related to accessibility and affordability:

> *It changed your view of patients because you always judge them when they come in ... In the doctor's head it's always careless and all that, but then you can't understand it's the money, financial support, the transport. We have to look at all those factors, the factors that stop them from access to healthcare*. (Samoa student 18)

6.2.2.2 Curiosity and interest

The case presentations stimulated curiosity which led to stimulating discussion. Students were not only curious about each other's culture and health system but also about getting to know each other, particularly in the introductory video-conferencing. There were interesting discussions in the similarities and differences in medical student life in Samoa and New Zealand. When these discussions did not take place, students commented that they wish they had:

> *This is really cool getting to talk to people in their context and asking - Do you guys live at home? What it's like being a student there? I wanted to know if they get a living allowance and things like that. So, I think something I would really like is just more opportunity to get to talk to students from other places because it's interesting.* (Dunedin student 12)

Students did not explicitly state they were curious, however, their interest in asking questions during discussion implies their curiosity.

For one Christchurch student this curiosity led them to apply for an elective program in the Pacific Islands:

It has had an impact on me after talking to them and hearing how they do their healthcare. I have decided to do part of my elective in the Pacific Islands, which I have applied for and have been accepted to. (Christchurch student 7)

Overall, 64% of students stated that participation in the GHCR increased their interest in global health, while 32% of students were neutral and 4% of students stated that participation in the GHCR had decreased their interest in global health. There was a statistical difference but no practical difference between the centres (Question 4, Table 6.6). Agreement ranged from 47% among Dunedin students and 70% among Christchurch students to 90% of Samoan students; 10% of Samoan students, 25% of Christchurch students and 47% of Dunedin students were neutral while 3% of Christchurch students and 6% of Dunedin students disagreed with this statement (Figure 6.4).

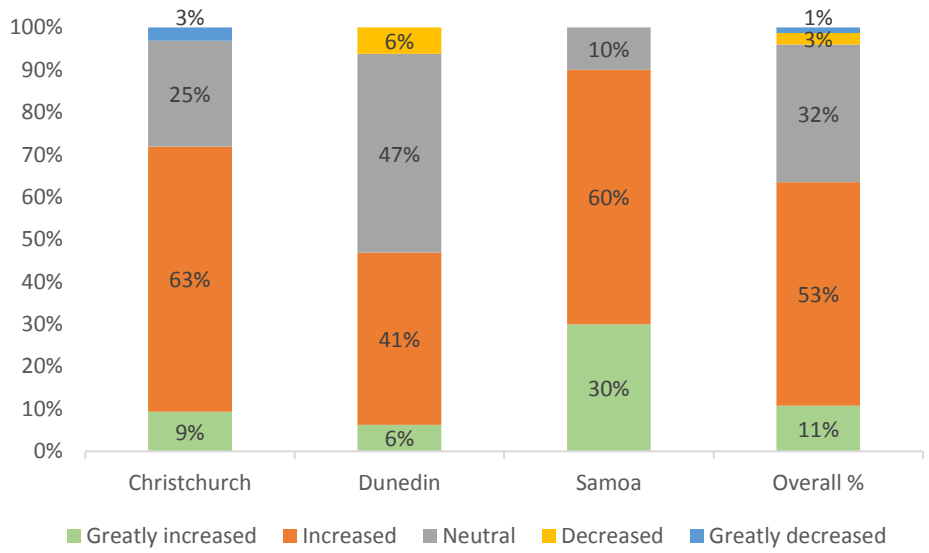


Figure 6.4. Responses by centre to post-GHCR question "Participating in the GHCR has _____ my interest in learning about global health."

6.2.2.3 Reciprocity

Reciprocity was implicit in the GHCR because students expressed a reciprocal commitment in preparing the clinical case presentations and often actively thought about what content would be interesting for their collaborative group. This sub-theme also supports the sub-theme of "Collegiality" in Section 6.3.2.1.

I like that idea that the classroom is about sharing our case with the Samoan students, and they would share their case with us. (Dunedin student 4)

The hardest part is probably finding questions or picking questions in which they would be interested in, in terms of what, we knew they already had a session with the New Zealand groups …I feel like we could have probably chosen more New Zealand appropriate questions which probably would have been a lot more interesting for them. (Christchurch student 8)

When reciprocity in the collaboration had not been achieved, students expressed regret in not applying more effort, for example:

I feel like we didn't give them as much as they gave us. I sort of walked away from it feeling that we should have put more effort in there to share with them the things that are unique to New Zealand, the way that they shared the things that were unique to Samoa. (Christchurch student 7)

Samoan students often went to great effort in preparing the clinical case presentation, partly due to the lack of Samoa-specific epidemiological data, and this explored further in "Section 6.3.3.3 Case Preparation".

6.2.2.4 Humility

New Zealand students expressed humility after learning about the Samoan healthcare system, particularly when resource limitations were discussed, for example:

It made me appreciate so many aspects of our healthcare system and how easy it is for us to access healthcare! (Christchurch student)

I just feel very privileged to live in a country where we have the healthcare system that we have. Because obviously other countries are not as fortunate as us, and so for me, it was humbling. (Dunedin student 4)

When speciality training pathways in Samoa and New Zealand were discussed, New Zealand students expressed appreciation of their privilege, considering Samoan students would have to travel overseas for specialisation training:

It felt quite humbling to think as a New Zealander, if I want to specialise in something, I could just stay in New Zealand, and essentially I would have the

opportunity to do what I wanted, and I think that was very humbling to realise sort of the privileges we have as students in New Zealand. (Dunedin student 12)

6.2.2.5 Reflection

New Zealand students often reflected on their own culture after being exposed to the Samoan culture:

I think the main things I took away from it were cultural differences between the countries, having a deeper insight into our own culture, by viewing us from the outside. (Dunedin student 1)

For some students this reflection was an enriching process that increased their own cultural awareness, for example:

So, it was just one of those things, of like, becoming aware of your own culture through experiencing someone else's culture. (Dunedin student 1)

This reflective process of questioning one's own culture culminated in increased respect for future patients and their culture as one students' comment reflects:

It makes me kind of question my own beliefs about things. But then again, it just always comes back to them, what they are doing is fundamentally who they are. So, who am I to question them. And for me as a medical student and wanting to be health professionals that you have to work with these people. So, you just have to respect that that's their culture. (Dunedin student 3)

6.2.2.6 Vision for progress

Samoan students expressed a vision for progress to improve their own healthcare system after learning about New Zealand's healthcare system. The strong enthusiasm and motivation are evident from the following quotations:

But I can see it with my colleagues, they want it [start new health-related initiatives], they want that to happen here, they come after us debrief, you can see how energized they are to start that here. (Samoan student 14)

Everything New Zealand does, the health act that has been put up for different preventions and preventative measures. We can do that in Samoa using the available limited resources that we have, but there is always a way to facilitate that, that's what I have learned. There is a way to do it if we want to implement it. But I only learnt that out of the Global Health Class from what the students in New Zealand are presented. (Samoan student 19)

Some Samoan students were specific about the change they wanted with primary healthcare featuring commonly, for example:

Primary health care is the change I want to improve here, going out to rural places, creating awareness programmes. And also screening, there is not that much screening. (Samoan student 14)

6.2.3 Skill

Skill emerged as a minor learning theme in the GHCR from the qualitative data. Although, knowledge has been *attained* in the GHCR and attitudes were *influenced* by the GHCR, certain skills were *developed* in the GHCR, notably communication and research skills. Quotations in this section show that although some students were aware of their skills being developed in the GHCR, for the majority of students the skill development was implicit in researching, preparing, presenting and discussing the clinical case presentation.

6.2.3.1 Communication

Communication skills were developed in the GHCR for Samoan and New Zealand students. Samoan students expressed greater confidence in presenting due to their experience in multiple GHCRs:

But now I think I am more confident because for the last one, the recent one, I did the referral system by myself and I was confident even presenting. (Samoan student 18)

More confident talking to group of people from a different area. (Samoan student 15)

New Zealand students showed awareness that presenting to a group unfamiliar with their system required re-evaluation in the way the information was being communicated:

> *It made us re-evaluate in how we would do things because when you present to someone who understands the system you do it differently when you present to someone who doesn't, I guess it makes you think more about what you do, so it was helping in that way.* (Christchurch student 7)

For some students this awareness only came after presenting the information:

> *There was the example of Samoa explaining how their medical system worked and I was in charge of talking about our referral system and it never occurred to me to actually explain how our referral system works. Because to me, that's just how referral system works. Like, I am so kind of entrenched in my own ways that I am not even really aware that it could be different to somewhere else.* (Dunedin student 1)

6.2.3.2 Research

Samoa-specific epidemiological data was not easily accessible to Samoan students, as illustrated by the quote below:

> *It's just the only problem is collecting the data, we find it hard because there's pretty much nothing online.* (Samoan student 17)

This required Samoan students to consult their teachers and analyse the raw data in log books and databases to produce the required information in preparing the presentation. This was a comprehensive and tiring process:

> *And like for us because we are working in the wards, we ask our registrars, sometimes they are very helpful to guide you where to go, which person to look for, and from there we go, we see that person, we interview that person, we gather our information.* (Samoan student 14)

> *We always go back to the log books to look for how common things are [prevalence of medical condition].* (Samoan student 15)

> *Especially that epidemiology, that's the most challenging aspect of the slides, it's the epidemiology because we have to find the raw data from the admission books in the wards or the discharge summaries under database system that we have.* (Samoan student 19)

Although Samoan students did not explicitly state development in their research skills, these quotations show that their skill development was implicit in preparing the presentation.

New Zealand students did not explicitly remark on the development of their research skills. Furthermore, given the easy accessibility of New Zealand-specific epidemiological data, New Zealand students may not have developed their research skills to the same degree as their Samoan peers.

6.3 What are the self-reported experiences of medical students in the GHCR?

Innovation, partners in learning, challenges in the GHCR and social connection emerged as themes regarding the experience of medical students in the GHCR. Themes were supported by either quantitative, or qualitative, or mixed forms of data (Table 6.7). Quantitative data have been categorised according to the theme and subtheme they support (Table 6.8, Table 6.9, Table 6.10 and Table 6.11).

Research Question 3, regarding whether the opportunity for social interaction in the introductory video-conferencing and Facebook components enhance global health learning, is explored in the social connection theme.

Table 6.7. Themes and subthemes regarding the experience of medical students in the GHCR supported by quantitative and/or qualitative.

Theme	Subtheme	Quantitative	Qualitative
Innovation	Novelty		√
	GHCR as a "virtual international experience"		√
	Freedom of expression		√
Partners in learning	Collegiality	√	√
	Collaborative learning		√
Challenges in GHCR	Connectivity		√
	Competing demands		√
	Case preparation	√	√
Social Connection	Facebook	√	√
	Introductory video-conferencing	√	√

Legend

Samoa

Christchurch, Dunedin and Samoa

Table 6.8. Innovation theme supported by quantitative data.

Theme	Subtheme	Post-GHCR questionnaire statement	Data			
			Mode of learning	**Mean**	**Mode**	**Median**
Innovation	Novelty	26. How would you like to learn about global health? Please rank from 1 - 6 (1 being most desirable and 6 being least desirable)	GHCR	1.7	1.0	1.0
			In-house tutorial	2.8	2.0	3.0
			Collaborative case-based learning with medical students in your own country	3.1	2.0	3.0
			Lecture	3.9	4.0	4.0
			Personal reading (e.g. journal articles, books, etc.)	4.6	5.0	5.0
			E-learning (e.g. Coursera, etc)	4.8	6.0	5.0

Table 6.9. Partners in Learning theme supported by quantitative data.

Theme	Subtheme	Post-GHCR questionnaire statement	Rule A[a]	Rule B[b]	Likert-scale data (%)					
						Strongly agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
Partners in learning	Collaborative learning	22. Collaborating with my international peers was valuable to my learning in the GHCR.	0.463	77-90	Overall (n=74)	33%	46%	14%	6%	1%

[a] Rule A = Statistical difference between centres when p-value ≤ 0.05, underlined when Rule A is met.
[b] Rule B = Practical difference between centres when at least one centre has <70% positive agreement (greatly increased and increased combined) and absolute difference between centre is ≥ 30% regarding the statement. Centre-wise lowest agreement % to highest agreement %, underlined if Rule B is met.
[c] Centre-wise percentage only given if Rule A or Rule B, or both, are met.

Table 6.10. Challenges in the GHCR theme supported by quantitative data.

Theme	Subtheme	Post-GHCR questionnaire statement	Data				
				< 30 minutes	**30 – 60 minutes**	**60-120minutes**	**> 120 minutes**
Challenges in the GHCR	Case preparation	17. How much time did you spend on the clinical case preparation in this GHCR experience?	Overall (n=74)	56%	23%	17%	4%

Table 6.11. Social connection theme supported by quantitative data.

Theme	Subtheme	Post-GHCR questionnaire statement	Rule A[a]	Rule B[b]	Data					
Social connection	Introductory video-conferencing	18. The introductory and task briefing video-conferencing was a good way to start the GHCR	0.04	50-100		**Strongly agree**	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
					Christchurch (n=30)	10%	40%	33%	17%	0%
					Samoa (n=10)	60%	40%	0%	0%	0%
					Overall (n=40)	23%	40%	25%	13%	0%
		19. Would you prefer the 30-minute introductory and task-briefing GHCR session with or without video-conferencing?	0.601	76-80		**With video-conferencing**			**Without video-conferencing**	
					Overall (n=40)	77%			23%	
	Facebook	28. Were you part of the closed Facebook "Run 1 GHCR" group?	0.688	80-80		**Yes**			**No**	
					Overall (n=40)	80%			20%	

32. The closed Facebook GHCR group was valuable to my GHCR experience.	0.047	46-88		**Agree**			**Disagree**	
			Christchurch (n=24)	46%			54%	
			Dunedin (n=8)	88% %			13	
			Overall (n=32)	56%			44%	
33. The closed Facebook GHCR group was valuable to my GHCR experience because _____. You may select multiple answers.:				**It increased the sense of collegiality**	**Sharing resources was convenient**		**I enjoyed getting to know medical students from the other country.**	
			Overall (n=18)	43%	31%		24%	
35. The closed Facebook GHCR group was not valuable to my GHCR experience because _____. You may select multiple answers.				**I didn't have the time.**	**I didn't find the group activity stimulating.**	**I didn't find it useful.**	**It was distracting.**	**Other**
			Overall (n=14)	57%	29%	21%	14%	0%
37. I would prefer the GHCR (case preparation and discussion via video-conferencing) with no Facebook.	0.705	88-88		**Agree**		**Disagree**		
			Overall (n=32)	13%		88%		

6.3.1 Innovation

Students expressed GHCR was "novel" and "cool" way to learn about global health and broaden perspectives without the need to travel. As such GHCR can be considered an innovative approach to global health learning. Samoan students expressed that the GHCR allowed them to share their experiences and thoughts freely with their New Zealand peers.

6.3.1.1 Novelty

Students commented that GHCR was a "novel", "cool", and "tangible" way to learn about another health system and culture. The opportunity to collaborate and learn with international peers on a practical basis by harnessing technology capabilities was especially valued.

> *This is based on making global health seem like a more real and tangible thing (for lack of a better description). We actually talked to people who are in a different health system with different (but also surprisingly similar in some instances) health problems. It seems so much more accessible than learning about global health on a purely theoretical basis.* (Christchurch student)

> *Just the fact that we were talking, and having a lesson with students in Samoa, and that is kind of special really, that we could break down those geographical barriers with technology.* (Dunedin student 5)

> *I really enjoyed it, I think it's a really, really cool idea. I think that it's so cool that the technology lets us do that kind of thing. (*Christchurch student 7)

New Zealand and Samoan students commented that GHCR was more engaging, interesting and different from the everyday medical student schedule of learning in the clinic, lectures and tutorials:

> *The positive aspects are actually something different, and today I have been through four presentations, and this by far was the most engaging because it was actually interacting with students who are just like us that we don't actually get to see every day.* (Christchurch student 8)

> *It's a distraction from all the stress in the ward.* (Samoan student 15)

> *I know it's very positive. Why? Because I think it was many reasons, but one is that … our curriculum is often just what do you need to know for exams. I appreciated it that this is what a well-rounded medical student … needs to know, and this added to it.* (Christchurch student 7)

The memorability and impact of GHCR were evident in the detail with which many students could recount their learning and experience, for example:

> *It's sort of something that you remember as well, I don't remember papers eventually, they don't have that much impact on me, but if you do the global classroom, and then you remember, like these things that I am telling you on this interview, if I were to read a paper, I wouldn't be able to tell or talk to an interview on those things. But they have stuck with me in my mind.* (Dunedin student 3)

Students shared the novelty of virtual learning with international peers with their family and friends:

> *I kind of went home and told my family, and it was like "Oh wow, that's really cool!", like who else gets to really do that?* (Christchurch student 7)

When students were asked to rank how they would like to learn about global health, GHCR was ranked higher than other modes of learning (Question 26, Table 6.8). GHCR may be ranked as most desirable by students because of the novel, collaborative and practical approach to global health learning. Figure 6.5 shows that GHCR was ranked the highest by a considerable margin, compared with the second-ranked mode of learning (46 > 24, In-house tutorial). Interestingly, tutorial-based modes of learning were ranked higher than didactic modes of learning (i.e. lecture-based learning). Personal reading and e-learning were ranked as the least desirable modes for global health learning.

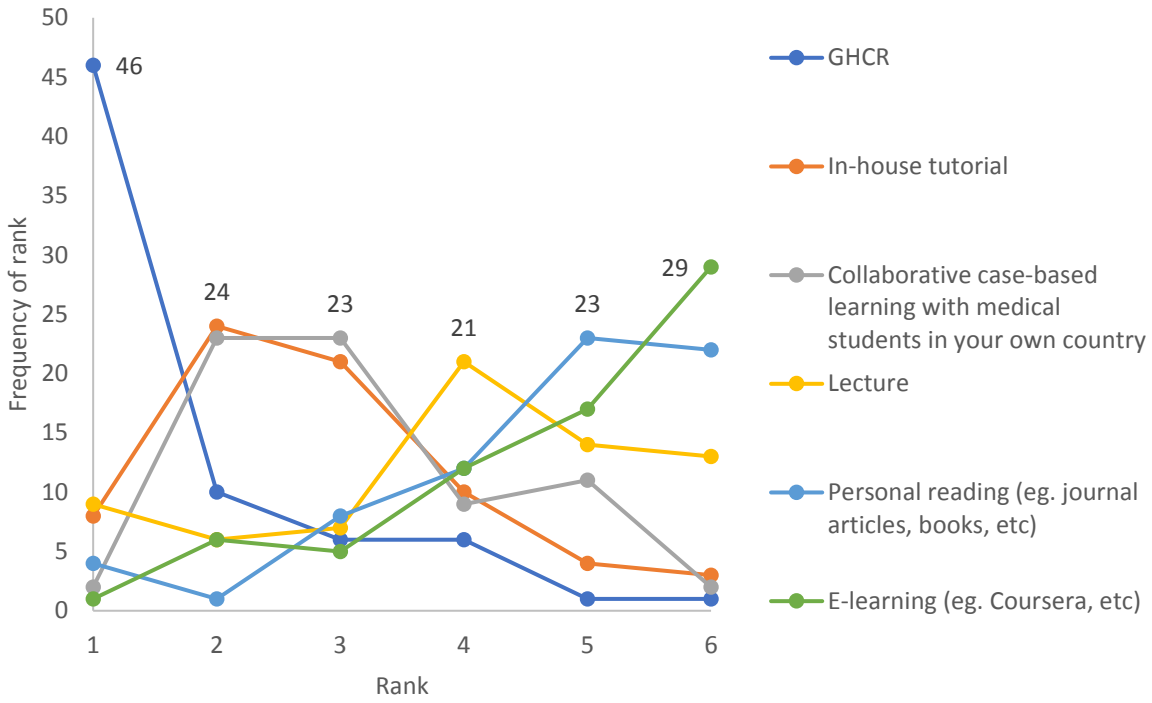


Figure 6.5. Frequency distribution of rank given by New Zealand and Samoan medical students for desirable modes of global health learning. Rank 1 is most desirable while Rank 6 is least desirable. The highest frequency for each rank is shown numerically.

6.3.1.2 GHCR as a "virtual international experience"

New Zealand and Samoan students commented that the GHCR enabled them to gain perspective about another health system and culture without the need to travel. Samoan students unanimously expressed this. This is especially important for Samoan students given that many do not go on international electives mainly due to financial constraints. In this regard, GHCR could be considered a "virtual international experience", as illustrated by quotes below:

> *It can easily be accessed through video conferencing, we don't have to travel, you don't have to travel with a lot of expenses, and a lot of other issues. But it's something we can do from where we are, and we can be exposed, we can learn from each other over the video conferencing.* (Samoan student 15)

> *Apart from going to the country, you can't really get a better opportunity to learn about a culture.* (Dunedin student 3)

So instead of going over there and seeing it for ourselves, we can just learn through the global health classroom. It helps really broaden our views because some of us have been on an island for pretty much our whole lives, so just these classes we have had with the students in New Zealand makes us really think about how different it is over there. (Samoan student 17)

6.3.1.3 Freedom of expression

Samoan students expressed that GHCR gave them a sense of freedom to express themselves and share their experiences and thoughts with their New Zealand peers. Part of this is due to the strong social and medical hierarchy in Samoa:

It gives us the freedom to express ourselves when we are in the global health class. It's good in a way for us on this end to see that there is that freedom to speak in medicine, from a cultural perspective. I see in different cultures, like New Zealand, looking at the Global Health Class looking at the New Zealand students, I love the way they express themselves. (Samoan student 14)

In health system we are working under, especially for us as students we don't really have a big say in the hospital in the teams in the wards we are at. But this is a very good forum to express ourselves and the experiences we have in the wards we are working in. (Samoan student 19)

6.3.2 Partners in learning

Students in the GHCR could be considered partners in learning because they were collaborating with the mutual goal of global health learning by sharing clinical cases and relevant socioeconomic and cultural factors. Importantly, this learning was only possible due to the commitment of both collaborative groups to each other. Collegiality and collaborative learning are elements central to the theme of being partners in learning.

6.3.2.1 Collegiality

New Zealand and Samoan students expressed a strong sense of collegiality, manifested by mutual respect, reciprocal commitment to each other's learning and their common experience

of being medical students. Overall, 79% of students agreed, 14 % were neutral and 7% disagreed that collaborating with their international peers was valuable to their learning in the GHCR. There was no statistical nor practical difference between the centres (Question 22, Table 6.9). Students enjoyed the reciprocal learning about each other's health system and culture, as well as seeing their own from another perspective:

> *Positive is learning from each other, learning about the different cultures. (*Samoan student 18)

> *I think it was more just having the opportunity to work along with another population of medical students who are not in New Zealand. I like that idea that the classroom is about sharing our case with the Samoan students, and they would share their case with us.* (Dunedin student 4)

This enjoyment was based on students having the opportunity to interact with international peers with whom they shared a common experience of being medical students, as illustrated by quotes below:

> *It was just really cool to see, these are students who are just like me, they are the same level as me, maybe a year above, and learning the same things as me.* (Dunedin student 12)

> *Probably interacting with students at the same level as us in another country and learning about how they study/how their med school system works. (*Christchurch student)

> *Finding out the similarities and differences and the experience of medical students was probably the most valuable thing to me. (*Dunedin student 13)

Students commented that the sense of "camaraderie" in the GHCR made the learning more engaging and memorable than had it been by reading or lecture-based learning (i.e. didactic learning). This point is also evident in that GHCR ranked higher than other tutorial and didactic modes of global health learning (Figure 6.5) and in the quotes below:

> *I think definitely having the med students there [in the GHCR] because you can connect with them and there is a sense of camaraderie that you experience, you are going through the same kind of training. I think having a single consultant would be not the same. (*Christchurch student 7)

I doubt it would have made as much of an impact if I had just read about it or had a lecturer talk about it. I think student taught sessions is useful and can be more interesting and engaging than just having a single lecturer talking at you for a certain amount of time. (Dunedin student 1)

I think you don't get any opportunities that can really replace or replicate what you get from actually talking to people and learning from them directly, and them learning from you. (Dunedin student 12)

New Zealand students encouraged more frequent, rather than a one-off, GHCRs with the same international group so that the relationship between the groups could develop. New Zealand students commented that having only one GHCR limited the potential for collaboration and learning. More integration within the curriculum and increasing the frequency of GHCR was suggested:

And meeting new colleagues, because essentially these guys are our colleagues… So, having able to have that relationship with them is awesome, and it would have been great to have a chance to develop it more and do like all our case presentations like that, rather than just a one-off. (Dunedin student 10)

So, in terms of this experience, I would like to say integrate it a lot more frequently into the curriculum because I think this is fantastic. But it loses a lot of its worth when you don't have a relationship built out of it. (Christchurch student 8)

I think it's a valuable thing to do. I think would be good to do more, and it would be good if it had a greater emphasis on it from the rest of the course. (Dunedin student 13)

Samoan students did not make comments regarding the frequency of GHCRs. This may be because, at the time of the interview, Samoan students had had at least five GHCRs.

6.3.2.2 Collaboration

Collaboration in the GHCR was based on students preparing, presenting and discussing clinical cases and relevant socioeconomic and cultural factors. Students acquired knowledge about patient care, health system and culture in each other's country and their own. Additionally,

certain attitudes were promoted, and skills were developed in this collaborative learning process.

The following sections focus on components of the GHCR, case preparation, and plenary video-conferencing, that led to learning, followed by factors that influenced learning in the GHCR. The introductory video-conferencing and Facebook component are covered under "Social Connection".

6.3.2.2.1 Case preparation

In the GHCR, students prepared their clinical case presentation with information on relevant socioeconomic and cultural determinants of health. Students commented that preparing the clinical case presentation laid a foundation for discussing the similarities and differences between countries:

> *I think the cases [are] important because it's something that we do on a daily basis to see a patient and write the case history they do on a daily basis of something that we shared, like what are the similarities and what are the differences. So, I think the case presentation, pretty good.* (Christchurch student 7)

> *I think case-based learning is awesome, so doing some cases, but also have to do a case and after the case, you look at reasons why things had happened in the case.* (Christchurch student 8)

The guiding questions relating to the health systems, socioeconomic and cultural determinants of health were also valued because they acted as a precursor for stimulating discussion:

> *What worked well is I quite like the topics presentation [guiding questions] at the end of the cases. So, I thought that was quite cool and a good way to start the discussion surrounding the differences in the healthcare systems between the two countries. So, I think that should be continued.* (Christchurch student 9)

New Zealand students commented that the case preparation component was not especially different to what they usually do, however, the difference was in the virtual connection which enabled sharing of cases:

> *Preparing the cases for a group, there is nothing different about that, we do that all the time in research epidemiology, rheumatic fever, public health... And for*

them it's the same as well, it wouldn't be any different I think. What made it different is that virtual connection. And then when you actually do present your case, hearing about little things like traditional healers, and hearing them talked about that and then their healthcare system as well. (Christchurch student 6)

Although New Zealand students suggested that the case preparation component was not any different to what they usually do, the process of selecting stimulating and engaging content for their collaborative group was implicit in promoting reciprocity of learning (Section 6.2.2.3 Reciprocity).

Samoan students commented that part of their learning was based on preparing the clinical case presentation, particularly in researching Samoa-specific epidemiological data:

The preparing part we get to learn from people that we interview of what actually happens, it's not what you think, it's different. (Samoan student 14)

Yes, pick up as you learn, as you are researching, you are learning as you are preparing for it. (Samoan student 16)

A factor that influenced the learning process was active guidance by teachers during the case preparation component. Students greatly appreciated guidance by teachers regarding how best to prepare the clinical case to ensure good learning content for both collaborative groups:

I really really appreciate that input [from teachers] and I would encourage that to be continued and formalised as something that consultants do for this project. (Christchurch student 8)

6.3.2.2.2 Plenary video-conferencing (case presentation and discussion)

New Zealand and Samoan students commented that their knowledge-based learning originated mainly from the case presentation and discussion, as evidenced by:

Majority of it was in the case presentations, so them talking, us talking, asking questions back and forth, which were where the majority of the learning took place. (Christchurch student 9)

Yes, it's both, but if I want to weigh out, I will learn more from the presentation, but then that's an understanding what I would learn in the discussion. (Samoan student 15)

So, I would say for the presentations, that is basically where I got a lot of my information from. When we were doing the Q&A at the end, obviously there was a lot of discussion about topics that it was nice to just listen to and actually just process them and think about it and think about the impacts that would have on health. (Dunedin student 4)

It was hard to distinguish whether students learned more from the presentation or the discussion. However, students did comment that the discussions enabled them to explore particular points with greater detail:

We were allowed to get deeper into the whole differences in environments, things that are normal there might be quite unusual for us. Things that we have available here, is a limited resource for them. And how that, in turn, affected their own practice and learning. Things that are so normal to us, so normal to them that they won't even think of putting it on a slide. But once we get into a conversation, it does come up. (Dunedin student 2)

And discussions just to clarify things that you probably presume that that's what it means, but as we discuss and talk about it, then you tend to understand it more. (Samoan student 16)

The interaction between students in the video-conferencing implicitly influenced New Zealand and Samoan student attitudes such as respect and curiosity. Samoan students expressed a vision for improvement for their own healthcare system, and New Zealand students reflected, often with humility, on the contrast with New Zealand healthcare.

Christchurch students commented that the plenary video-conferencing component of the GHCR needed to be more interactive. Instead of doing case presentations consecutively, students suggested introducing the opportunity to ask questions as the presentations proceeded would be more engaging:

> *So instead of just presenting it in one big block, asking them from what differentials they would think or how this has been managed from your guys' perspective could be something to keep everyone a bit more engaged. Instead of just having one group talking for half an hour and then another group for half an hour and then the questions at the end like that.* (Christchurch student 9)

An important factor influencing what students learned were the cases that were presented and discussed. A Dunedin student recognised that the case on sexual health elicited in-depth discussion on culture, which may not have happened in a different case:

> *I thought that we were fortunate in a way… our case was to do with sexual health because it really highlighted some cultural differences that I wonder a different case would have. So, I think that was an advantage.* (Dunedin student 5)

6.3.2.3 Summary

Collaborative learning in the GHCR was based on students preparing, presenting and discussing clinical case presentations with relevant socioeconomic and cultural factors. Samoan students and New Zealand students acquired knowledge-based learning and developed specific skills from the case preparation and plenary video-conferencing. Attitudes were influenced by both these components of the GHCR.

Audio and video connectivity was the most significant factor that influenced the collaborative process and will be discussed next.

6.3.3 Challenges in the GHCR

Internet connectivity during video-conferencing and competing demands arose as challenges for New Zealand and Samoan students in the GHCR. Additionally, the lack of easily accessible Samoa-specific epidemiological data was also a challenge for Samoan students.

6.3.3.1 Internet connectivity

Connectivity during the video-conferencing arose as the key barrier in the GHCR. Poor connectivity refers to a lag in audio and video feed from one side to another, or loss of connection. Although poor connectivity arose in several GHCRs, all progressed with both sides presenting and discussing the case. Any lag period, particularly in audio, caused major disruptions to the presentation and discussion. The exact number of times there was lag or loss of connection in the GHCR was not recorded. Adequate connectivity was considered vital to the GHCR Learning Design and students became frustrated when they had to repeat themselves due to lag in audio:

> *Negative, obviously you can't help the IT side of things, that does make things really challenging.* (Christchurch student 8)

> *The negative part of that [GHCR] is the internet connection, especially from Samoa, it's very bad.* (Samoan student 19)

> *The negatives was the internet connection, it keeps cutting out, or sometimes [cuts] everything that the other person is saying and we hate to, and I hate to say, "Oh sorry, can you repeat that?", over and over again, it can get annoying.* (Samoa student 16)

When the connection was especially poor in the video-conferencing, the convenors resorted to audio and screen-sharing only. Interestingly, this led students to comment that *seeing* their international peers was an important aspect of their experience because it allowed them to connect with them:

> *What I found challenging was although we heard them, we weren't able to see them. And to me that was a challenge because you weren't able to connect with them or know who was speaking.* (Dunedin student 4)

> *Although the sound isn't quite as good with the video, I think putting a face to the students we're talking to makes the whole experience a lot more impacting.* (Christchurch student 8)

> *I guess on a practical level it was a bit disappointing that we couldn't see Samoa, so it did seem like they were kind of disconnected voices which didn't really help with any conversations. Like, it was hard to see whether they were interested, or bored, or even in the same room, or on their phones.* (Dunedin student 1)

Several New Zealand students were highly critical of GHCR due to the bad connection at times, but interestingly, Samoan students were not so critical:

> *Sorry to be so critical but the limitations of the internet/technology made the whole experience seem like a waste of time at this point.* (Christchurch student)

> *There were a few issues in the GHCR which can be improved like internet connectivity, however, this was only a minor issue and it did not have much impact on our global health presentation.* (Samoan student)

Students were hopeful that with time, the connection would improve:

> *So, the setbacks would be the internet connection, and then hopefully that will improve.* (Samoan student)

6.3.3.2 Competing demands

Samoan and New Zealand students commented that their experience of GHCR was made less enjoyable and more challenging due to competing demands such as clinical work, assignments and tests:

> *Unfortunately, I personally didn't find this helpful. I think there is potential, but I had other assignments on my mind and I couldn't hear well through the conference speaker and I didn't get into it.* (Christchurch student)

> *I mean the rest of the [Year 4 Public Health] course is quite gruelling. There is a lot of readings, a lot of classes and a lot of sitting in windowless rooms all day.* (Dunedin student 5)

> *And, there is a lot of work that we have to do up at the ward as well, we are expected to present every morning, so depends which ward you are in, sometimes you are just so caught up with the workload at the wards and you will think you will be able to do it [case preparation] overnight.* (Samoan student 14)

Although students recognised the potential in GHCR, competing demands led some students not having a valuable experience.

> *I didn't feel like this was a valuable experience for me. It had the potential but with other assignments, this wasn't my priority.* (Christchurch student)

The issue of prioritisation was especially challenging for Christchurch students, all of whom were in Year 5 because they were facing their final exams at the end of the year:

> *I suppose 5th Year, very stressful year in terms of exams, a lot of information being thrown at you a lot of the time, so having things, and I hate having to say this, but having things that are not high yield being put into the curriculum can be quite challenging.* (Christchurch student 8)

Competing demands were especially challenging for Samoan students due to the added difficulty of preparing the clinical case presentation, which is discussed next.

6.3.3.3 Case preparation

Figure 6.6 shows the time spent on clinical case presentation by centre. Overall, 56% of students spent less than 30 minutes, while 21% spent more than 60 minutes.

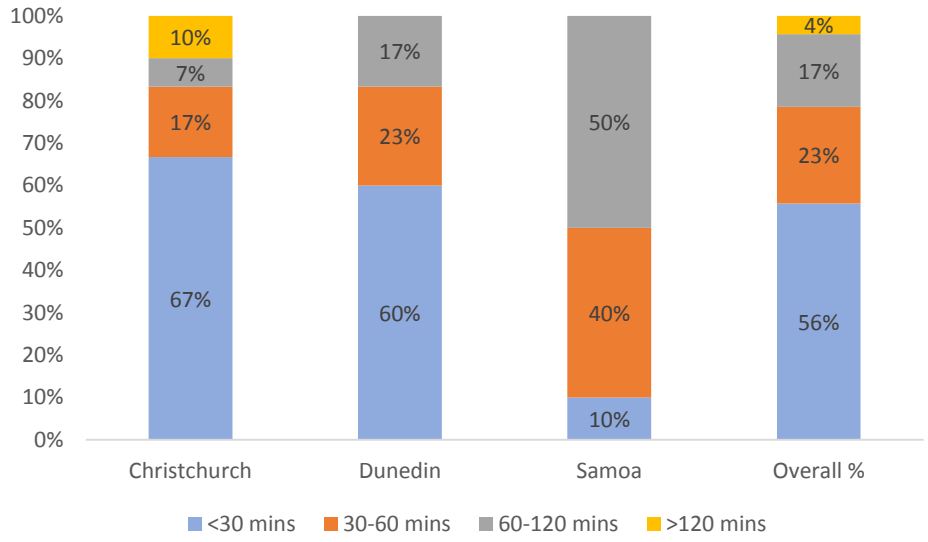


Figure 6.6. Response by centre to post-GHCR question "How much time did you spend on the clinical case preparation in this GHCR experience?"

Samoan students found preparing the case, particularly researching Samoa-specific epidemiological data, was onerous and time-consuming. Samoan students collectively spent more time preparing and researching in GHCR than Dunedin and Christchurch students, given that 90% of Samoan students spent more than 30 minutes on the clinical case preparation while only 40% of Dunedin students and 33% of Christchurch students spent more than 30 minutes (Figure 6.6). The lack of readily available Samoa-specific epidemiological data meant students spent more time on interviewing people who would know where the data was and analysing data from log books and databases. The positive aspect of this process led to the development of research skills (Section 6.2.3.2). However, for one Samoan student, the extensive time required for collecting the epidemiological data made the overall GHCR experience negative:

> *I think it would be like more the negative side because we also have to do studies and stuff, we have a lot. I think because it's not easy to collect data, it requires a lot of time, so if we did put aside time for global health, I think it would be a*

positive experience. But right now, it's just added weight, like stress for students up in the clinical years on rotations. (Samoan student 17)

6.3.3.4 Summary

Connectivity and competing demands arose as challenges in the GHCR for New Zealand and Samoan students. Poor connectivity severely limited the potential for global health learning and positive experience in the GHCR. Clinical work, assignments and tests were recognised as competing demands, which negated the potential for learning and enjoyment in the GHCR. The lack of readily available Samoa-specific epidemiological data made case preparation time-consuming and arduous for the majority of Samoan medical students.

6.3.4 Social connection

Students had the opportunity to informally interact and socialise in the Introductory Video-conferencing and Facebook components of GHCR between NUS and Christchurch students (GHCR Model 1). Dunedin students did not experience the Introductory Video-conferencing and Facebook components.

Student experience of Introductory and Video-conferencing and Facebook is explored below, with evidence of whether these components enhanced global health learning in the GHCR.

6.3.4.1 Introductory video-conferencing (iVCR)

Of the Samoan and Christchurch students, 63% agreed, 25% were neutral and 13% disagreed that the introductory video-conferencing session was a good way to start the GHCR (Question 18, Table 6.11). There was a statistical and practical difference regarding this statement. All Samoan students agreed with this statement while only 50% of Christchurch students agreed, 33% were neutral and 17% disagreed (Figure 6.7). Overall, the difference between centres suggests that students were neutral regarding the inclusion of the introductory video-conferencing in the GHCR. Interview data revealed reasons for this neutrality but also gave reasons why students agreed or disagreed regarding the value of the introductory video-conferencing component of the GHCR.

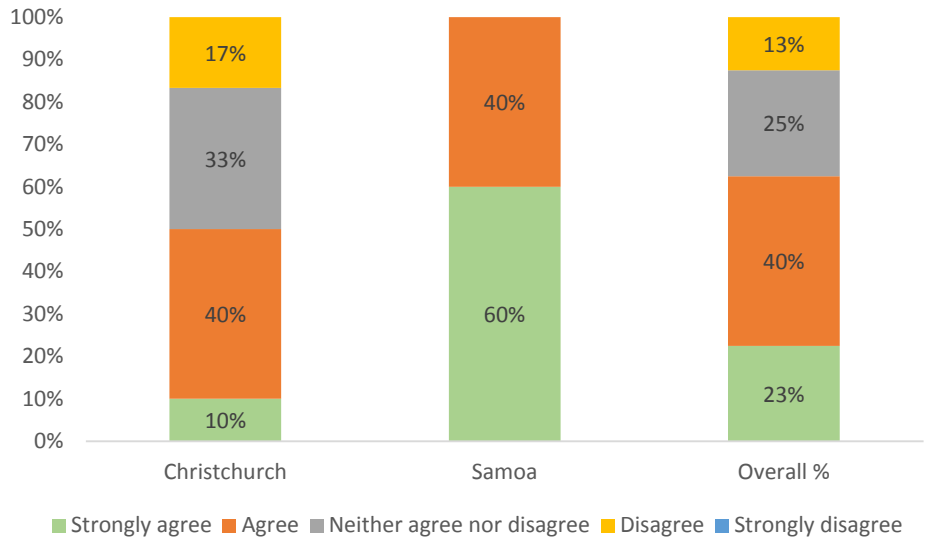


Figure 6.7. Response by centre to post-GHCR Likert-scale question "The introductory and task briefing video-conferencing was a good way to start the GHCR"

The introductory video-conferencing component allowed Samoan and Christchurch students to get to know each other and talk about their hospital, medical school and student life:

> *There are a lot of things like this that they come across, like when they ask how many hospital beds we have, and we have 60 hospital beds for children and they have half of that. It's like two different completely different countries, they*

obviously have a different perspective on what kind of facilities we have here, and they have there. (Christchurch student 10)

So, the first one was in the introductory session, they are all wearing scrubs, so it seems to me that they must be involved in teams, something we thought about our own medical education that we are not very often involved directly with teams. (Christchurch student 11)

This social interaction enhanced the collegial and collaborative relationship, enabling students to be more open and engaged in the plenary video-conferencing session:

I guess a lot was also from the context of the introductory discussion where we learned interesting things about their healthcare system as a whole, and you had the case and you put it in the context of how we understood their health system and asking how does that fit. (Christchurch student 11)

It's a sense of creating a fellowship and relationship with them. And also, I really like the introductory class, it's like to explain what we do here - What's available in our medical school and like to tell them to come over for elective, that's what I promote in those introductory classes. (Samoan student 19)

It was awesome to meet the students first and see them on video, so we could introduce ourselves and have an informal chat. This made presenting much easier and stimulated my interest in GHCR early on. (Christchurch student)

Christchurch students commented that a major barrier to success in the introductory video-conferencing was shyness and awkwardness in interacting with an unfamiliar group of students. Part of this awkwardness was due to meeting students for the first time virtually:

I guess it's hard if you walk into a room with a bunch of people, and you are Skype-ing another bunch of people, you are like, do I talk? Am I waiting for someone else to talk? (Christchurch student 10)

Students comment that the informal interaction was significantly influenced by the quality of internet connectivity. For example, when connectivity was good the discussion flowed much better and allowed for the informal discussions to take place.

Do I introduce myself? I guess it was way too awkward, just because we were having those technical difficulties and so, hi, and then there is no response

because they were cut out and then they come back, and we cut out. (Christchurch student 10)

It's not much difference to me because it's on video and because of the poor internet connection, it just puts me off. So, you see, we mumble, it ruins the class honestly, but we have those days when there is a perfect internet connection and there is a perfect discussion. (Samoan student 19)

Conversely, when there was poor connectivity the informal interaction was disrupted. For example, students shared jokes when introducing themselves. One particular one was from a New Zealand student asking, "How do two oceans say hello to each other?" The punch line was "They wave!" but this was lost in the audio lag. The Christchurch student later commented on the interview:

I am not sure if they are laughing at the fact that they didn't hear the punch line or the actual punchline itself. (Christchurch student 11)

The above example illustrates how important connectivity was for social interaction in the introductory video-conferencing. Students were interested and curious about getting to know each other, but this was only successful and enjoyable when the connectivity allowed it.

Despite the overall neutral response regarding the value of the introductory video-conferencing component in the GHCR, 78% of students stated they would prefer the introductory and task briefing component with video-conferencing, while 22% stated they would not. There was no statistical nor practical difference between Christchurch and Samoa (Question 19, Table 6.11). The majority of students showing a preference for having the introductory video-conferencing component may be partly due to their desire to establish a more informal relationship. Dunedin students did not have the introductory video-conferencing session but suggested that it would be interesting to have more time to get to know their international peers:

This is really cool getting to talk to people in their context and asking - Do you guys live at home? What it's like being a student there? I wanted to know if they get a living allowance and things like that. So, I think something I would really like is just more opportunity to get to talk to students from other places because it's interesting. (Dunedin student 12)

6.3.4.1.1 Summary

Overall, this suggests that the introductory video-conferencing component enhanced global health learning in the GHCR when connectivity was good. However, this learning was a result of more indirect effects rather than direct effects. It indirectly enhanced learning because students had the opportunity to informally interact and gain perspective about each other's context, which enhanced the collegial and collaborative relationship allowing for more open and in-depth interaction in the plenary video-conferencing.

6.3.4.2 Facebook

Overall, 80% (n=32) of Christchurch and Samoan students were part of the Facebook group (Question 28, Table 6.11). Of these students, 56% agreed that the closed Facebook group was valuable to their GHCR experience. There was the statistical and practical difference between the centres regarding this statement (Question 32, Table 6.11). Of the Samoan students, 88% agreed while only 46% of the Christchurch students agreed that the Facebook group has been valuable to their GHCR experience (Figure 6.8). This suggests Samoan students valued the Facebook component more than the Christchurch students.

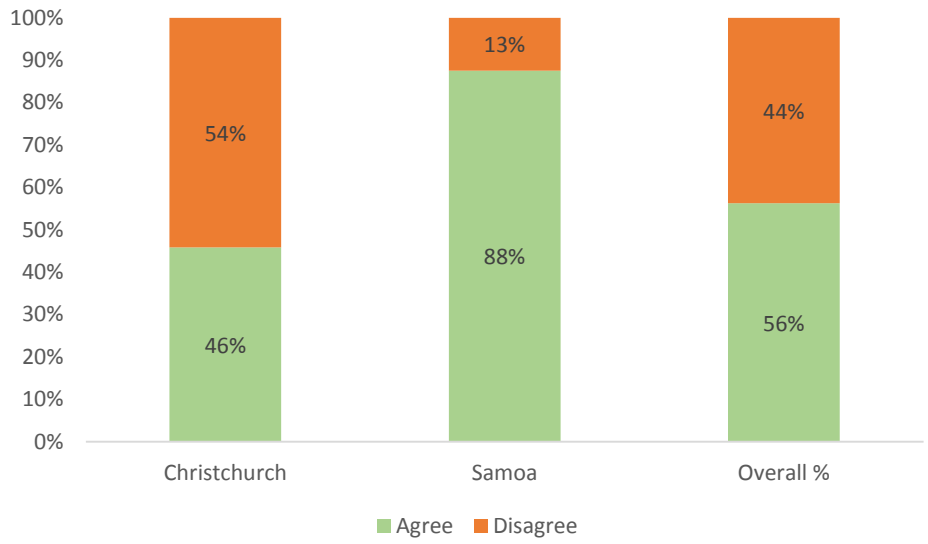


Figure 6.8. Response by centre to post-GHCR question "The closed Facebook GHCR group was valuable to my GHCR experience."

The most common reasons for students agreeing that the closed Facebook group was valuable to their GHCR experience were that it increased the sense of collegiality (43%) and that sharing resources was convenient (31%) (Question 33, Table 6.11).

> *Facebook also helped greatly I reckon, as it was easier, more accessible forum to share ideas and communicate questions to other members in the class.* (Samoan student)

The most common reasons for students disagreeing that the closed Facebook group was valuable to their GHCR experience were that they did not have the time due to competing demands (57%), and the group activity was not stimulating (29%) (Question 34, Table 6.11). Shyness and the short time frame were also stated as limiting factors for Facebook interaction:

> *There were some informal learning and socialisation. I think shyness was the main barrier to full utilisation of this forum. I also think there was perhaps too little time from being added to the group until the video conference. I think posting "polls" or videos would be a good way to stimulate conversation on the FB group in future.* (Christchurch student)

> *There was not much posted on the page and I feel like the NZ students had other presentations they were working on at the same time, so this might have been the priority over GHCR. (Christchurch student)*

> *I was quite busy around the time and sadly trying to engage on the page slipped my mind for most of the time. I understand this is a sort of pilot project, but I do think I would engage more if this was a many-week programme where we shared cases every fortnight or something like that. As it was it was all over before I had got my head around what the page was for. (Christchurch student)*

Despite students being overall neutral regarding the value of Facebook, 88% (n=32) of students that were part of the closed Facebook group agreed that they would prefer GHCR with Facebook (Question 37, Table 6.11). Part of the desire to have Facebook in future GHCRs may be because students like the option of being able to interact informally with their international peers:

> *If you take away Facebook, then there's, you got no option in contacting. So, people always want the option.* (Christchurch student 10)

Additionally, students may recognise that the Facebook component has the potential to be more stimulating and interactive. Students suggested that having more time and more GHCRs would establish the environment for a social, informal relationship to develop:

> *I thought maybe if there was more time, and that we were the first group, but maybe we have been in that group a little bit longer, because we were just getting to the stage of sharing a few things, and posting pictures and that kind of thing, and then we did the global health classroom and then I feel like everyone thought, OK that's over now, even though something we could keep using but I mean we are much less likely to if it's not in our run that we have to do.* (Christchurch student 7)

6.3.4.2.1Summary

Overall, students were neutral regarding the value of Facebook in the GHCR with positive aspects that Facebook enhanced the collegial relationship and enabled sharing of resources while noting that they were busy with competing demands and did not find the Facebook group activity stimulating. Despite the neutrality regarding the value of Facebook, the majority of students stated they would prefer the GHCR *with* Facebook, partly because it serves as a medium for interaction with suggestions to make the group more stimulating.

Chapter 7: Discussion

This chapter discusses the findings of this study, as well as placing them in context with existing literature, and evidence regarding similar global health learning models. The study's strengths and limitations are then examined, followed by implications for practice and recommendations for future research.

7.1 Summary of the key findings in this study and a proposed model

This study has produced multiple important findings. These findings suggest there are key elements that are essential to the GHCR pedagogy as depicted in Figure 7.1 under headings of input, process and outcomes. I discuss these key elements to show how the findings support them and then place them in context with the existing literature. The key elements arising from the findings in this study are:

- Clinical cases
- Guiding questions
- Students' background knowledge and experiences
- Teachers as facilitators
- Students as self-directed learners
- Self-directed learning
- Peer learning and social interaction
- Video-conferencing

Facebook is also discussed but is not a key element in the GHCR and the rationale for this will be discussed.

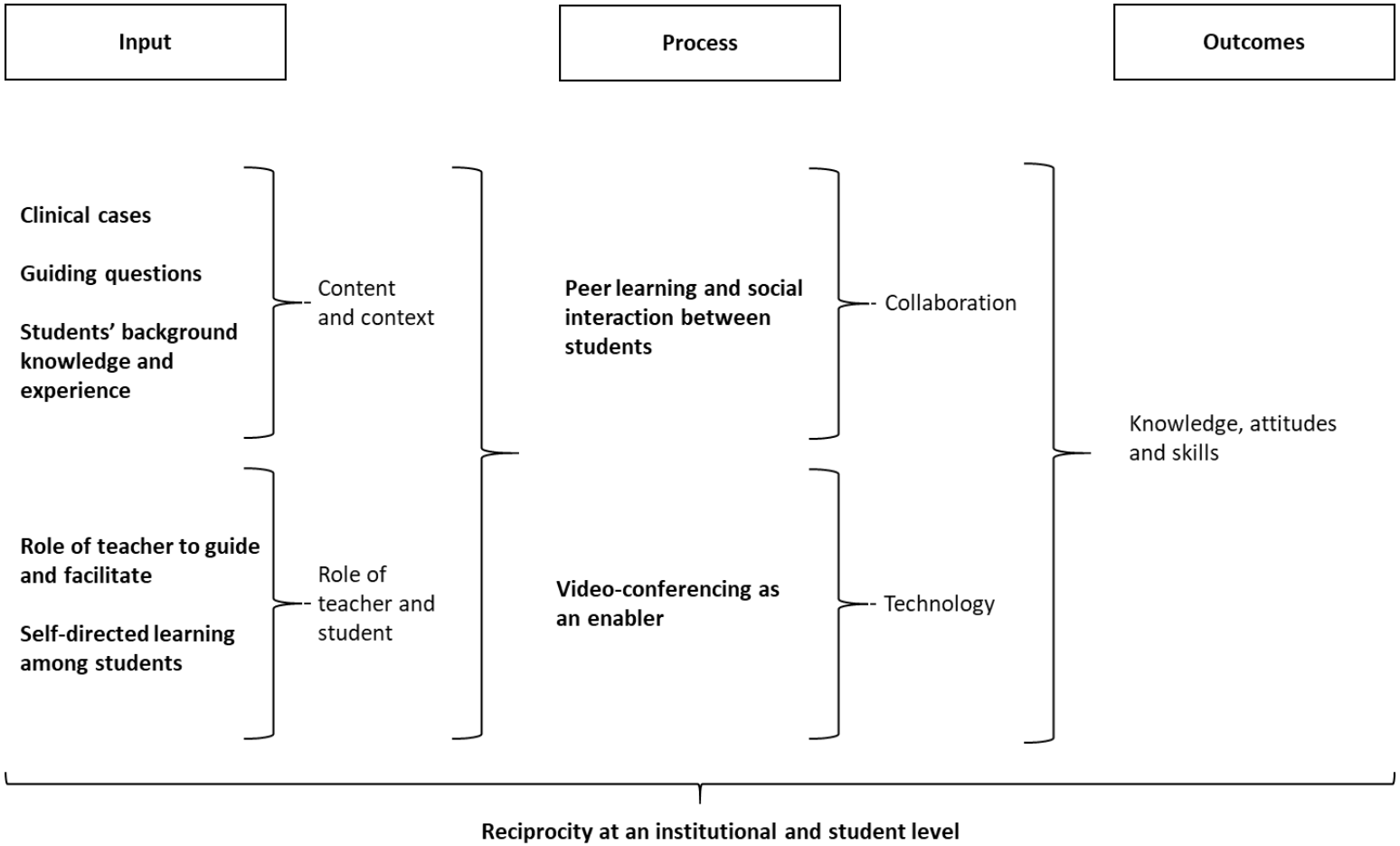


Figure 7.1. Model of key elements identified in the GHCR categorised into input and process components leading to the outcomes.

7.1.1 Clinical cases

A clinical case report is a paper-based portrayal of an individual patient that includes the symptoms, signs, diagnosis, treatment, and follow-up. This report format is commonly used by healthcare professionals and students.

New Zealand and Samoan medical students valued the clinical-case based learning in the GHCR. They stated that the familiarity of discussing clinical cases and relevance to their medical studies established a common ground for collaboration. The clinical cases were important because they provided a practical and real scenario using the guiding questions to understand global health concepts such as socioeconomic and cultural factors affecting health.

Case-based learning has been a long established pedagogical method in medical education (Florek & Dellavalle, 2016; Onishi, 2008; Thistlethwaite, 2012). Findings in this study correspond with literature suggesting that students enjoy and learn effectively from case-based learning (Thistlethwaite, 2012).

The familiarity of clinical cases to medical students and relevance to their medical studies supports clinical cases as a key element in the GHCR.

7.1.2 Guiding questions

Guiding questions in the GHCR covered topics relating to the health system, culture, determinants of health and other factors influencing health. Questions ranged from "What is the epidemiology of your case in your country?" to "How did the patient access care?"

Guiding questions provided meaningful focus to the clinical cases to ensure the intended global health learning outcomes arose in the GHCR. Students greatly appreciated the guiding questions because they were a "good way to start the discussion surrounding the differences in the healthcare systems between the two countries." Discussion relating to culture, access to care and other global health concepts also emerged in the plenary video-conferencing.

Students also stated that answers to the guiding questions and discussion points emerging from them were "so normal to them that they [wouldn't] even think of putting [it] into a [PowerPoint]slide", but in the plenary video-conferencing, they realised that what appeared normal to them was unusual for their international peers. Thus, the guiding questions promoted shared understanding regarding health systems, culture and determinants of health among

students, that may not have occurred without them. The importance and value of having guiding questions in the GHCR is evident in the student discussions that took place and the reported learning outcomes.

The guiding questions in the GHCR align with several of the recommended global health learning concepts, such as determinants of health and cultural diversity and health (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2012). The combination of clinical cases and guiding questions to achieve the desired global health learning outcomes in the GHCR closely resembles the Biggs model of constructive alignment. Constructive alignment is a marriage of two components. The "constructive" aspect refers to students constructing meaning through relevant learning activities, and "alignment" refers to the set-up of the learning environment that supports the learning activities towards achieving the desired learning outcomes (Biggs, 1996).

Guiding questions in the GHCR have proven to be key elements, because they provided meaningful focus to the clinical cases for promoting learning of global health concepts.

7.1.3 Students' background knowledge and experience

Background knowledge and experience of students in the GHCR relates to their prior learning and experiences within their health systems and cultures, as well as key determinants of health.

Students' prior knowledge was activated during the discussion with their international peers in the plenary video-conferencing, and sometimes in the introductory videoconferences. For example, a question such as "Why is there such a big difference between health statistics for Pacific Islanders and European in New Zealand?" in the plenary video-conferencing required Christchurch students to reflect on their prior learning to answer the question appropriately. Although students did not overtly state the importance of their prior knowledge and experience in the GHCR, it became implicit in the discussions when they answered each other's questions.

Prior knowledge is considered important in medical education because it provides meaning, context, and connections for new knowledge. This concept is supported by a constructivist learning approach that emphasises building on learners' existing knowledge in active learning environments, where prior ideas and concepts can be challenged and new ones applied and elaborated (Mann et al., 2010). The work of Malcolm Knowles on characteristics of adult learners emphasises that adults learn more effectively when new knowledge can be connected with prior knowledge and experiences (Knowles, 1973).

Discussion among students in the GHCR is important because it activates students' prior knowledge, thereby encouraging deep learning, critical thinking, and development of new knowledge. Importantly, sharing of prior knowledge and experiences by students is an important aspect of peer learning because it promotes a collegial and collaborative learning relationship.

7.1.4 Teachers as facilitators

The role of the teacher in the GHCR was to provide guidance to students in the case preparation and facilitate the virtual collaboration. The teachers in the GHCR were the UOC, DSM and NUS course conveners of medicine modules for senior medical students.

Teacher guidance for the case preparation differed between the centres. Both Samoan and New Zealand students were introduced to the GHCR in formal class time and received information about their tasks in the "GHCR Student Guide." However, Samoan students received more "hands-on" guidance from their teacher than Christchurch and Dunedin students in preparing the case presentation. The guidance was to support Samoan students collate and analyse Samoan-specific epidemiological data. This guidance may have helped Samoan students develop their research skills. Teachers in Christchurch and Dunedin were comparatively "hands-off" and let students seek guidance when needed. Both the New Zealand and Samoan student presentations were reviewed by course conveners before the plenary video-concerning to ensure the content was correct and appropriate.

Teacher facilitation in the video-conferencing component was similar between the centres, whereby teachers were active facilitators but not content providers. Facilitators started the virtual classroom with group introductions and often an ice-breaking activity (such as "Share something about your country"). Ground rules regarding the format of the video-conferencing session were verbalized by facilitators. This helped ensure effective time management, thereby enabling both groups to have time for presenting and discussing. The plenary video-conferencing was primarily student-led although facilitators guided the discussions to add and clarify understanding. This promoted more student interaction which was considered to be important by the teachers for overall learning.

New Zealand and Samoan students appreciated the guidance and facilitation by their teachers, evidenced by quotes such as "I really appreciate that input [from teachers] and I would encourage that to be continued." New Zealand students were satisfied with the "hands-off"

approach because it allowed them to self-organise within their groups. Samoan students suggested that a less "hands-on" approach would make GHCR less time intensive and more manageable with their relatively heavy clinical learning commitments.

A key role of teachers in small-group educational activities, such as the GHCR, is to ensure that active peer learning takes place. Effective guidance by teachers helps students know what is expected of them, what they are supposed to do in a particular setting, how long to take, what to do when they have finished, and what to do if they need help .

Effective facilitators encourage learners to talk, debate and question amongst themselves (Dennick & Spencer, 2010). Beginning a classroom with group introductions and ice-breaking activity have been shown to be important when students meet for the first time to reduce anxiety and insecurity (Dennick & Spencer, 2010). This helps create a comfortable, conducive learning environment . Teachers as facilitator requires a commitment to the "learner-centred" approach whereby teachers help learners build on their existing knowledge in an active, collaborative manner (Dennick & Spencer, 2010). Effective facilitation sharply contrasts with the didactic "transmitter of knowledge" role that teachers may assume . Teachers as facilitators is a key aspect of peer learning because it allows the student to learn from each other and with each other, with guidance and facilitation from teachers, thereby encouraging active, deep and critical learning (Boud, Cohen, & Sampson, 2006).

The role of teachers as facilitators is a key element in the GHCR. Furthermore, the "hands-off" or "teacher stands back" approach appears to be appreciated by students.

7.1.5 Students as self-directed learners

Self-directed learning refers to a process by "which individuals take the initiative, with or without assistance of others, in diagnosing their learning needs, formulating learning goals, identify human and material resources for learning, choosing and implement appropriate learning strategies, and evaluating learning outcomes" (Knowles, 1975). Essentially, this means students taking responsibility for their learning, with or without guidance from their teachers.

Students were initially guided by teachers and received instruction in the "GHCR Student Guide." Preparing the clinical case presentation required students to consult their patients, hospital records and their teachers to collect the required information. Students also needed to research and select appropriate content to answer the guiding questions. In the plenary video-conferencing, students were sufficiently prepared to present the case material and confident to

discuss points of interest and answer questions from other students, often from the other country. Self-directed learning among students was expected by teachers in all centres to encourage teamwork, communication and shared understanding.

Students reporting learning outcomes from preparing the clinical case presentation, and presenting and discussing in the plenary videoconferencing, gives evidence of the importance of self-directed learning in the GHCR. Samoan students reported learning about their health system and developing their research skills in the clinical case prepartion. Importantly, the attitude of reciprocity was promoted in the GHCR as students thought about what content to research and present to their international peers. In the plenary videoconferencing, both New Zealand and Samoan students discussed aspects of their country's health system and culture by asking and answering each other's questions. Some students reported competing demands, such as assignments, clinical teaching and assessments as barriers limiting their engagement in the GHCR.

Knowles (1975) outlines the advantages of self-directed learning by suggesting that learners who take the initiative learn better than passive learners, learn more purposefully and with greater motivation, and then retain their learning longer. Self-directed learning has been an important educational concept in higher-level education, particularly relating to health science professional courses (Levett-Jones, 2005; O'Shea, 2003; Tagawa, 2008). Studies show that self-directed learning increases student confidence, autonomy, motivation and preparation for lifelong learning (O'Shea, 2003).

Self-directed learning in the GHCR is a key element because it encourages students to take the initiative and responsibility for their learning, with guidance and facilitation by teachers. Furthermore, self-directed learning in the GHCR may also promote curiosity and seems to enhance interest in learning about global health.

7.1.6 Peer Learning and social interaction

Peer learning refers to students learning "with each other and from each other without the immediate intervention of a teacher" (Boud et al., 2006). Essentially, this means teachers stand back and let students lead their own learning.

Students were partners in learning, founded on a strong sense of collegiality and collaboration, which places peer learning as a key element in the GHCR in the GHCR.

There are many forms of peer learning, including peer tutoring, peer teaching, and reciprocal peer learning (Boud et al., 2006; Gogus, 2012; Topping & Ehly, 1998). Reciprocal peer learning is most consistent with the learning process in the GHCR because students acted as both learners and teachers to share their knowledge and experiences, and regarded each other as equal partners in learning (Boud et al., 2006; Saltiel, 1998). Such reciprocal learning aligns with the overall goal of global health where there is a desire for participating institutions and individuals to be equal partners with true reciprocity (Adams et al., 2016; Frenk et al., 2010). Studies indicate that peer learning leads to critical thinking, deep learning, shared understanding and long-term retention of learned material (Boud et al., 2006).

Peer learning is supported by the educational theory of social constructivist learning developed by Vygotsky (1978), which has overlap with Piaget's work on cognitive constructivist learning (Piaget, 1973). Social constructivist theories suggest that students working together as peers on an authentic learning task build their knowledge by social interactions (Boud et al., 2006; Vygotsky, 1978). Interestingly, the common approach of teaching medical students about global health (lecture-based curriculum) is in direct contrast to the philosophy that learning is primarily a social activity (Battat et al., 2010; Dewey, 1963; Kassebaum, 1989; Lindeman, 1926). Hiltz, Johnson, and Turoff (1986) underline the importance of social interaction, stating that "the social process of developing shared understanding through interaction is the 'natural' way for people to learn" (p. 22). Social interactions have potential for students to develop social and communication skills, build social relationships and develop positive attitudes towards each other (Johnson & Johnson, 1989; Johnson, 1999; Kreijns, Kirschner, & Jochems, 2003).

Peer learning is effective in the GHCR because students are able to act as both teachers and learners within the same environment. Peer learning is based on reciprocity and collaboration between students and these values are also considered to be important in global health learning. Furthermore, engaging students in peer learning in the GHCR created potential for sharing culturally diverse opinions and perspectives, which may have promoted learning of attitudes such as cultural understanding and respect. Some opinions and perspectives shared in the GHCR challenged some students' beliefs, as evidenced by quotes such as "I mean that was just a really weird thing to hear, and it sort of demonstrated a really different set of cultural values and expectations around sexual intercourse between partners and consent".

Students in the GHCR found that learning together as peers in a virtual classroom makes learning about global health "more real and tangible" and "much more accessible than learning [global health] on a purely theoretical basis."

7.1.7 Video-conferencing

Video-conferencing using Zoom® was a key element in the GHCR that enabled students in Samoa and New Zealand to connect and learn together. Video-conferencing was utilised in the introductory and plenary components of the GHCR.

The introductory video-conferencing was utilised for the NUS-UOC GHCR and gave students an opportunity to get to know each other, and talk about their medical school, student life, and other points of interest. Christchurch and Samoan students found that this informal interaction stimulated more open and engaging discussion in the more task-oriented plenary video-conference. Some students felt shy and awkward about virtually meeting their international peers for the first time, which was why the introductory VC was utilised. Dunedin students, who did not have the introductory video-conferencing session, were perceived to have engaged just as well as their Christchurch peers in the plenary video-conferencing session. Given the logistical requirement (finding appropriate time suitable to both schools and setting up) of arranging the introductory video-conferencing session and perceived lack of direct learning outcomes, the introductory video-conferencing session may not be a key element. It may be considered an enhancing element for student experience in the GHCR.

The plenary video-conferencing component consisted of the bi-directional clinical case presentation and discussion led by students and facilitated by teachers. Students were positive overall regarding the content and format of the plenary video-conferencing.

The advent of video-conferencing allows the real-time, two-way verbal and visual interaction in a typical classroom to be simulated in a "virtual classroom" whose boundaries are limited only by the reach and adequacy of the video-conferencing network (Greenberg, 2004). Studies draw several conclusions about video conferencing-based distance education: video conferencing compares favorably with traditional instructional methods; interactivity is key to the success of such virtual classrooms; video conferencing expands the reach of education; and instructional strategies must be matched to the technology (Greenberg, 2004). Video-conferencing is widely used in continuing medical education, postgraduate medical education, undergraduate medical education, and telementoring (Lamba, 2011).

The introductory video-conferencing provided an opportunity for informal interactions between students before the task-orientated plenary video-conferencing. Social interaction is considered an important aspect of learning according to social constructivist theories. This is

the because the interaction between learners influences how they think and what they think about (Vygotsky, 1978).

Students were overall enthusiastic with video-conferencing being used to transcend boundaries for global health learning but were frustrated when poor connectivity arose. Video-conferencing in the GHCR is essential to create the virtual classroom to enable global health learning among medical students in diverse settings. This is especially valuable for medical students who may not have the resources to travel to other countries to gain international field experiences. Thus, the GHCR presents an equitable global health learning model that is equally accessible and affordable for linked medical students in low-income and high-income countries.

7.1.8 Use of Facebook

Facebook is a social media platform which was utilised in the GHCR as a supplementary tool to enable social interaction between Samoan and Christchurch students in their own time and to explore whether this would enhance learning in the GHCR.

Student satisfaction was neutral and student engagement was low in the GHCR Facebook group, therefore Facebook was not deemed a key element in the GHCR. Students recognized the potential for interaction via Facebook but stated lack of time due to competing demands and lack of on-going contact after the GHCR as barriers to greater engagement. Despite this, the majority of students (88%) expressed Facebook should be included in future GHCRs due to its potential for sharing resources and interaction.

A review of the use of social-networking sites in medical education by Cartledge, Miller, and Phillips (2013) had two key findings: firstly, overall positive satisfaction among students, and secondly, student engagement was variable between studies. In contrast, students reported satisfaction as being neutral and engagement as limited in the GHCR Facebook group.

For Facebook to be more engaging and valuable to student learning in the GHCR, further research and development is needed. Facebook is not a key element in the GHCR.

7.1.9 Summary of the key elements and model

The findings in this study suggest that some elements arose as being important to the experience and learning of medical students in the GHCR. These key elements have been grouped into categories for simplification (Figure 7.1). Clinical cases, guiding questions and students'

background knowledge and experience arose as key element in the GHCR and collectively provide the content and context for student learning. Teachers as facilitators and students as self-directed learners inform the role of teachers and students in the GHCR. Peer learning and social interaction are key elements for collaboration in the GHCR, and video-conferencing is an enabler of the intercultural collaboration. Findings in this study do not suggest that Facebook is a key element in the GHCR. Content and context, and the role of teachers and students, are input components in the GHCR (Figure 7.1). Collaboration and technology are the process components in the GHCR (Figure 7.1).

The combination of the input and process components in the GHCR has resulted in the reported learning outcomes in this study, categorised into knowledge, attitudes, and skills. Overall, student reported learning outcomes in the GHCR align favourably with recommended global health learning concepts (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2017b) as shown in Table 7.1. There was evidence in the findings at the GHCR encouraged transformative learning for some students, especially with regards to change in perspective regarding the differences in health system and cultures between countries and populations. Given that students undertook the GHCR once only, it is promising to note the breadth and depth of learning students reported (Table 7.1).

Table 7.1. Comparison of global health learning concepts recommended in the literature (Jogerst et al., 2015; Johnson et al., 2012; Peluso, van Schalkwyk, et al., 2017) with reported learning themes and subthemes in the GHCR.

Recommended global health learning concepts	Competencies	Learning themes or subthemes reported in the GHCR
Culture diversity and health	Knowledge	Culture and impact on health
	Attitude	Cultural understanding and respect Humility and respect
	Skills	Communication
Health systems	Knowledge	Patient care Health system and impact on health
Determinants of health	Knowledge	Determinants of health
Global burden of disease	Knowledge	Not reported
	Skills	Research
Human rights and ethics	Knowledge	Not reported
	Attitudes	Cultural understanding and respect
	Skills	Not reported
Health equity and social justice	Knowledge	Not reported
	Attitudes	Cultural understanding and respect Vision for progress
	Skills	Not reported
Practice of global health	Knowledge	Not reported
	Attitudes	Cultural understanding and respect Humility and reflection Reciprocity Vision for progress
	Skills	Communication

Students reported gaining knowledge in the GHCR about patient care, health systems, and culture, with regards to their partner country. This knowledge-based learning arose from the content and context of the GHCR. Global health learning concepts identified in the literature align favourably with the knowledge-based outcomes reported in the GHCR (Table 7.1) (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2017b).

Attitudes such as cultural understanding and respect, and curiosity and interest, were promoted in the GHCR. Learning about the Samoan health system encouraged New Zealand students to reflect and appreciate their own health system, while Samoan students unanimously expressed a vision to change their own health system to provide better equitable health care to their people. Attitudes promoted in the GHCR align favourably with the recommended global health learning concepts such as the practice of global health, health equity and social justice, human rights and ethics, and culture diversity and health (Table 7.1) (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2017b). Importantly, the attitudes being promoted in the GHCR suggest that students are learning about cultural humility.

Students reported developing communication skills, while Samoan students also reported developing research skills. These skills align with global health learning concepts such as cultural diversity and health, the global burden of disease and the practice of global health (Jogerst et al., 2015; Johnson et al., 2012; Peluso et al., 2017b).

The reported learning outcomes in this study suggest that some students may undergo transformative learning in their GHCR experience. Transformative learning involves experiencing a deep, structured shift in the basic premises of thought, feelings and actions (Mezirow, 1990). This transformation may occur when leaners experience a progressive sequence of insights leading change in perspective (Mezirow, 1990). Findings in this study can only suggest that students may be undergoing change in perspective but cannot confirm it. This transformative process of learning is considered important in global health education because self-awareness and critical reflection of cultural and socioeconomic assumptions may result in a change in one's frame of reference, thereby encouraging medical students to become better healthcare professionals, advocates and change agents in their society (Frenk et al., 2010). Students in this study demonstrated some change in perspective regarding the state and challenges of different health system, and appreciation of one's own culture after learning about another. For example:

- One Samoan student commented that they "were shocked that New Zealand has to refer patients overseas as well". This shock may have been founded on an assumption

that New Zealand's health system would not have limitations because it is a high-income country.

- Samoan students unanimously expressed a desire to improve their health system after learning about New Zealand's health system, suggesting a perspective change in their vision for the future.
- New Zealand students commonly expressed that learning about Samoan belief system and culture, which appeared different to their own, encouraged them to "become aware of your own culture thorough experiencing someone else's culture".

The findings in this study suggest that students are learning about global health in an active and transformative learning experience in the GHCR. The global health learning concepts reported as learning outcomes in the GHCR are important in equipping the next generation of health professionals to practise with diverse populations and address socioeconomic and environmental determinants of health for better health equity. Overall, this suggests that the GHCR is a promising model for global health learning.

7.2 Importance of reciprocity

An overarching theme uniting the key elements of the GHCR is reciprocity (Figure 7.1), which can be defined as "partnership based on mutual respect and mutual benefit". Reciprocity is an important value in achieving equity in global health education and practice (Adams et al., 2016).

In the GHCR, reciprocity reinforces partnership at both a student level and an institutional level. At a student level, reciprocity in the GHCR refers to exchange of knowledge and experiences between students in diverse settings regarding one's own health system and challenges, culture and determinants of health, with the objective of global health learning. The exchange of this information occurs in the GHCR with a peer reciprocal approach, where students act as both teachers and learners, and equal partners in learning. Students valued the reciprocal learning design of the GHCR, which manifested as mutual respect and a commitment to each other's learning. This sense of reciprocal collaboration was commonly expressed in quotes such as "I like that the classroom is about sharing our case with the Samoan students, and they would share their case with us" and "Positive [aspect of the GHCR] is learning from each other". Students at each collaborating schools prepared content that they thought would be interesting for their partner group, "The hardest part is probably finding [content] in which they would be interested in". Students expressed discontent when the virtual classroom was not reciprocal, "I feel like we didn't give them as much as they gave us".

Importantly, findings in this study suggest that students favour a reciprocal learning environment in the GHCR.

At an institutional level, reciprocity in the GHCR means being in a collaborative partnership. This is demonstrated by the learning activity aligning with the priorities and needs of each institution, and outcomes of the collaboration being evaluated to inform further development and progress. The priorities and needs of each institution relate to what it considers to be important for their students' learning. The main agents of achieving reciprocity at an institutional level in the GHCR are the course convenors who need to have a well-functioning collaborative relationship. This involves having good communication to ensure mutual decision-making regarding content in the GHCR, and time and date for the virtual classrooms.

Reciprocity in the GHCR at both a student level and an institutional level is important for equity in the partnership, and to ensure sustainability of the collaboration.

7.3 Comparison of the GHCR with similar learning models

Four learning models similar to the GHCR were identified in the literature (Ambrose et al., 2017; Goldner & Bollinger, 2012; Keynejad et al., 2013; Murphy et al., 2017). Global health learning models were similar if they were based on medical students in different countries collaborating virtually. This comparison briefly describes each model and then compares them with the GHCR using the key elements. Context and content, the role of teachers and students, collaboration and technology provide a generalisable framework to compare these models (further details in Table 7.2)

The four global health learning models similar to the GHCR are Aqoon (Keynejad et al., 2013), problem-based Aqoon (pb-Aqoon) (Murphy et al., 2017), the global health course at Johns Hopkins University School of Medicine (JHUSOM) (Goldner & Bollinger, 2012) and reciprocal intercultural participatory peer-learning activity (RIPPLE) (Ambrose et al., 2017),

Aqoon, meaning "knowledge" in Somali, is a global mental health peer-to-peer e-learning partnership established in 2009 between medical students at Kings College London and Hargeisa and Amoud Universities in Somaliland (Keynejad et al., 2013). Challenges arose in establishing successful peer educational partnership, and to address this, a problem-based learning approach was applied to Aqoon, referred to as pb-Aqoon (Murphy et al., 2017). Aqoon

and pb-Aqoon involved students in UK and Somaliland paired together (one-on-one) to collaborate virtually. Post-activity data was collected from students in the UK and Somaliland for both Aqoon and pb-Aqoon (Keynejad et al., 2013; Murphy et al., 2017).

The RIPPLE activity involved online intercultural global health collaborative learning between third-year medical students from the University of Tasmania, Australia and University of NUSA Cendana, Indonesia. RIPPLE involved 11 virtual groups of students comprised of up to eight students with at least two from each university. Students volunteered to participate in this pilot study, and data were collected from groups in both countries (Ambrose et al., 2017).

The Johns Hopkins University School of Medicine (JHUSOM) launched its "Genes to Society" curriculum in 2010, which includes a compulsory four-day global health course for its 120 first-year medical students. One component of the course involves clinical-case based video-conferencing between large groups of students in JHUSOM and Uganda, Ethiopia, Pakistan and India. Post-activity data were collected from JHUSOM students only (Goldner & Bollinger, 2012).

Table 7.2. Comparison of the GHCR to Aqoon, pb-Aqoon, RIPPLE and JHUSOM (Ambrose et al., 2017; Goldner & Bollinger, 2012; R. Keynejad et al., 2013; Murphy et al., 2017)

	Aqoon (Keynejad et al., 2013)	**Pb-Aqoon**[10] (Murphy et al., 2017)	**RIPPLE**[11] (Ambrose et al., 2017)	**JHUSOM**[12] (Goldner & Bollinger, 2012)	**GHCR**
Content and context	Eight psychiatry topics based on clinical cases and treatment options, psychosocial and cultural aspects, and stigma	Problem-based six tutorial guides based on mhGAP-IG[13] to address a range of psychiatry disorders and psychosocial and cultural aspects	Research topics relevant to global health and tropical disease to compare situation in Australia and Indonesia	Clinical cases	Clinical cases and global health theme guiding question
Role of teacher	Guidance was provided by course coordinators, but students were not supervised during their virtual collaboration		Guidance provided, but students were not supervised during their virtual collaboration	Facilitation during virtual collaboration	Guidance in preparing content and facilitation during virtual collaboration
Role of student	Student pairs responsible for organising virtual collaboration and preparing content.		Virtual group of students prepare 500-word report on research topic	Students prepare, present and discuss content	Students prepare, present and discuss content
Collaboration	One-on-one peer learning to complete assigned task		Small-group peer learning	Large-group learning	Small-group peer learning to present and discuss content

[10] Problem-based Aqoon (pb-Aqoon)
[11] Reciprocal intercultural participatory peer-learning activity (RIPPLE) between medical students in Australia and Indonesia
[12] Global health course at Johns Hopkins University School of Medicine (JHUSOM) which includes clinical case based videoconferencing with medical students in Uganda, Ethiopia, Pakistan and India.
[13] WHO's mental health gap action programme intervention guide

	Aqoon (Keynejad et al., 2013)	**Pb-Aqoon** (Murphy et al., 2017)	**RIPPLE** (Ambrose et al., 2017)	**JHUSOM** (Goldner & Bollinger, 2012)	**GHCR**
Technology	Virtual collaboration using Medicine Africa, an online learning platform Establishing mutually suitable times and poor connectivity were challenges to engagement		Students communicated using online communication tools (e.g. Facebook and Skype)	Video-conferencing Time for collaboration was established by faculty Students were overall happy with internet connection, but poor connectivity was a challenge	
Reported learning outcomes	Learning of similarities and differences between psychiatry between two countries, including psychosocial and cultural aspects.		Leaning of global health concepts and insight into another culture	Differences in case management	Learning of knowledge, attitudes and skills relevant to global health, particularly with regards to partner country

7.3.1 Context and content in learning models similar to the GHCR

Students in all models needed to prepare content for collaboration with their international peers. Aqoon and pb-Aqoon focused on global mental health by addressing a range of psychiatric disorders and questions on cultural and psychosocial aspects to add meaningful focus. Pb-aqoon used content from the WHO's mental health gap action programme intervention guide (mh-GAP-IG). Similar to the GHCR, JHUSOM utilised clinical cases on maternal health, child health, chronic disease, and emerging diseases. The JHUSOM article does not show whether any questions were used to highlight relevant global health concepts. Content in RIPPLE was based on research topics formulated by teachers for students to compare the topics between Australia and Indonesia, for example, "Compare and contrast the epidemiology of dengue in Australia and Indonesia." The structure of these questions is similar to the guiding questions in the GHCR.

The use of clinical cases and global health themed questions in the GHCR to provide content and context is consistent with similar learning models. Furthermore, the combination of clinical cases and global health themed questions promotes practical and meaningful learning of global health concepts.

7.3.2 Role of teacher in learning models similar to the GHCR

The role of the teacher differed vastly between models. Teachers in Aqoon, pb-Aqoon and RIPPLE had a very "hands-off" approach and even virtual collaborations were unsupervised. This led students in the RIPPLE to suggest improvement by "better regulation of the task" and "more support for groups".

The role of the teacher to guide and facilitate virtual collaboration is important for promoting effective learning. Students were satisfied overall with the guidance and facilitation in the GHCR, with suggestions that a "hands-off" approach during case preparation is preferred.

7.3.3 Role of student in learning models similar to the GHCR

Students in all learning models were responsible for preparing the content and collaborating with their international peers. The role of students as self-directed learners is a key element

across learning models similar to the GHCR. However, the role of teachers to guide this learning process is crucial.

7.3.4 Collaboration in learning models similar to the GHCR

Students in all models valued peer learning with their international peers, but the number of students in each group varied between models. In contrast to the GHCR, Aqoon and pb-Aqoon were based on one-on-one student collaboration, but similar to the GHCR, JHUSOM and RIPPLE were group learning based. Group based collaboration has been resisted in the Aqoon because students valued the personal nature of one-on-one collaboration, which may be limited in a group setting.

Despite being small group based, students in the GHCR valued the collegial and collaborative relationship with their international peers. Group based peer learning in the GHCR may be more feasible because it fits in with existing undergraduate medical modules at the Otago Medical School, where year groups are already divided into small groups of 10-20 students. Furthermore, small-group based intercultural learning may create greater potential for sharing culturally diverse opinions and perspectives, thereby enhancing understanding of global health issues among students.

Students in Aqoon, pb-Aqoon and RIPPLE were responsible for mutually establishing suitable times for their virtual collaboration. However, the difference in time zones and schedules made engagement difficult. As in the GHCR and JHUSOM, partnership between teachers in the different countries to allocate formal time for collaboration may be more effective in overcoming logistical challenges of time zones and differing schedules, thereby improving engagement.

Reciprocity and partnership are values underlying these learning models, requiring teachers and institutions to have strong working collegial relationships in order to guide the collaboration.

7.3.5 Use of technology in learning models similar to the GHCR

In contrast to the GHCR, Aqoon and pb-Aqoon utilised an online learning platform, Medicine Africa, which was specifically designed for peer connectivity and case-based learning in online tutorials. Similar to the GHCR, JHUSOM also utilised videoconferencing capabilities to

connect to medical students and faculty in Uganda, Ethiopia, Pakistan and India. Students in the GHCR and JHUSOM were overall satisfied with the quality of videoconferencing, but intermittent poor connectivity became annoying. Students in RIPPLE were instructed on how to collaborate appropriately using a range of online platforms, such as Facebook and Dropbox, but were responsible for mutually deciding the medium for collaboration within their group. This approach led students to become frustrated with "establishing online communication, time-management, and successfully using technology", which acted as a barrier to "completing the group task and building authentic learning relationship [*sic*]".

Video-conferencing serves as an effective means for virtual collaboration in the GHCR. Importantly, students may prefer to be directed to using a well-tried and functioning communication tool, rather than let them decide from a range of options which appears to hinder the virtual collaborative learning process.

7.3.6 Reported learning outcomes in learning models similar to the GHCR

Students in all models reported positive learning outcomes relevant to global health. Students in Aqoon and pb-Aqoon reported similar outcomes to students in the GHCR, such as learning similarities and differences between two countries in the management of clinical conditions, and relevant socio-economic and environmental determinants of health. These learning outcomes are important and relevant to global health because medical students need to gain an appreciation that health systems, cultures and factors that influence health vary between countries and populations. This appreciation is an important step for future doctors to think globally and act locally to address health inequities. Overall, students in the GHCR appeared to gain a more holistic understanding of global health concepts compared to those reported in similar learning models.

7.4 GHCR study strengths and limitations

One of the key strengths of this study is the use of mixed-method research methodology. This allowed the researcher to draw on the advantages of quantitative and qualitative research for holistic investigation of the research questions. Quantitative and qualitative data were collected from students in all centres using the same collection method. The qualitative data collected in this study was especially substantive and informative, as is evident from the detail in quotations.

Previous studies on learning models similar to the GHCR have employed primarily quantitative research methods by using questionnaires with Likert-scale and open-ended questions (Ambrose et al., 2017; Goldner & Bollinger, 2012; Keynejad et al., 2013; Murphy et al., 2017). The mixed-method approach in this study therefore may extend the existing literature relating to similar learning models.

The high response rate in the post-GHCR questionnaires (82%) and qualitative interviews undertaken until cumulative data saturation in each centre increase the generalisability of the findings because a greater diversity of perspectives were captured. Similar studies show a questionnaire response rate much lower than in this study, ranging from 53% to 69%, compared to 82% in this study (Ambrose et al., 2017; Goldner & Bollinger, 2012; Keynejad et al., 2013; Murphy et al., 2017). The data analysis followed a triangulation approach to capture complementarity and divergence in outcomes between centres. Findings in this study were found to be complementary between three centres in two countries. The mixed-method approach, along with high response rates, and the complementarity of findings between countries increase the generalisability of this study.

Another strength of this study is that it was undertaken during the academic year at the medical schools in both New Zealand and Samoa. The GHCR was integrated into undergraduate medical modules as a compulsory component. This means students had less discretionary time to allocate to the GHCR due to competing demands such as assignments and tests. Therefore, findings in this study may represent real-world condition. Studies on learning models similar to the GHCR were pilot programmes and students were recruited as volunteer participants (Ambrose et al., 2017; Keynejad et al., 2013). Findings from pilot programmes may not represent real-world conditions because students who are motivated and interested in global health are more likely to participate, thereby introducing participation bias. This could decrease the generalisability of findings from similar studies. Although there may be some participation bias in this study, it could be comparatively less given the high response rate in the post-GHCR questionnaire.

A limitation of this study is the lack of independent verification of the themes extracted and how these integrate with recommended global health learning concepts (Table 7.1). Subjectivity on part of the researcher may therefore limit the conclusions that may be drawn. To mitigate investigator bias, the supervising team was consulted at every step of the qualitative data collection, analysis and reporting phases. Themes extracted from the data were discussed in Zoom meetings between supervisors in different centres and countries. Furthermore,

supervisors compared the findings in this study with their own observations as course convenors of the classroom, and in some cases challenged the findings leading to more analysis and discussions. Specific attention was given to themes extracted from interviews with Samoan students, which were reviewed by supervisor based in Samoa. Although there was no formal independent verification of the themes extracted, thorough steps were undertaken to consult with supervisors and cross-reference with their observations as course convenors.

A limitation of this study is the reliance upon self-reported data because the data collected represents what students reported they experienced and learned, which may be different from what they actually experienced and learned. Students' reports may be affected by their prior beliefs and perspectives, which could influence their reporting in the questionnaire and interviews. For example, students interested in global health may be biased towards agreeing with statements even if it is not a true reflection of what happened. Additionally, this study did not compare standardised pre-GHCR and post-GHCR global health competency, which would have added to the study strengths.

Another limitation of this study is that the same Samoan group collaborated with different Christchurch and Dunedin groups in the GHCR. As Samoan students became more accustomed to the GHCR, their increased comfort and confidence could have positively influenced the experience and learning of the New Zealand students. Thus, New Zealand students may have overestimated their positive experience and learning in the GHCR. Future research into the GHCR could explore the experience and learning of different groups collaborating each time. For example, the GHCR collaboration between Christchurch-Nepal and Dunedin-Samoa could be explored for complementarity in findings.

The small sample size (N=74) for the quantitative component in this study could be a weakness in this study. While this study may not include all the factors relating the learning and experience of medical students in the GHCR, the themes identified were relatively consistent in that common themes emerged time and again. Ideally, future research on the GHCR should have a larger sample size, something that was not possible given the one-year time frame allowed for a BMedSc(Hons) project.

7.5 Indication of importance of the findings

This study presents a global health learning model that was successfully integrated into different undergraduate medical modules (Paediatrics, Public Health, and Community Health) at medical

schools in Samoa and New Zealand. Findings from this study show students had a positive experience and reported learning outcomes relevant to global health. For some students this was a transformative learning experience because it broadened their perspectives on their own country's health system and culture. Thus, the GHCR shows promise for further implementation by medical schools in their curriculum.

Curriculum loading is a major barrier to the integration of new learning models. However, the GHCR model has the potential to be integrated without disrupting the schedule or learning objectives of the modules. In fact, integration of the GHCR may enhance student satisfaction and engagement with learning, as reported in this study. The key elements identified in the GHCR may be generalisable and transferable to most undergraduate medical modules, particularly at the Otago Medical School where case-based learning is the norm.

In future years, the GHCR could become a more student-led initiative, for example by recruiting students as "GHCR Coordinators" who have already undertaken the GHCR. Their role would be to guide their junior peers to prepare the case presentation, facilitate the plenary video-conferencing, and liaise with course conveners in both countries for smooth-functioning of the collaboration. The opportunity to guide, facilitate and liaise will allow senior students to develop their skill set while being supervised by course conveners. Junior students may also show greater engagement with their learning in the GHCR when it is being led by their senior peers. Course conveners involved in this study have already started to recruit GHCR coordinators in UOC and NUS.

Chapter 8: Conclusion

This mixed-methods study explored the learning and experience of medical students in the GHCR. Students in the GHCR reported improved knowledge, attitude, and skill-based learning outcomes. Findings suggest that some students had a transformative learning experience in the GHCR. The reported learning outcomes in the GHCR align favourably with recommended global health learning concepts, which are important in equipping the next generation of health professionals to practise with culturally diverse populations and address health inequities.

The GHCR is affordable and accessible for medical schools with video-conferencing capabilities. These factors may be particularly helpful for medical schools in low- and middle-income countries, where students are unable to undertake international field experiences due to financial constraints. Thus, the GHCR presents an equitable model for global health learning by using technology to transcend boundaries and overcome financial barriers

The GHCR presents a model for global health learning that is based on the core values of partnership, collaboration and reciprocity. Medical schools in different countries can partner together to deliver global health learning for their students. Currently, the Otago Medical School is partnering with medical schools in Nepal and Samoa. The school could extend partnerships to other medical schools, for example the Fiji School of Medicine, Fiji. Initiatives such as the GHCR can strengthen the relationship between medical schools in New Zealand and the Pacific Islands, where the collaboration is based on mutual understand and respect. Medical students being exposed to disparities in the Pacific region (inside and outside New Zealand) may encourage them to address these in their medical careers.

For effective development of the GHCR, collaborations between medical schools need to be continually evaluated to improve effectiveness of the GHCR. Results of these evaluation may form the basis of future summer studentship projects, creating more opportunities for students to learn about global health and medical education. Furthermore, more work will need to be done to improve the internet connectivity between collaborating schools. This may require further consultation with IT experts.

The key elements that emerged in this study may be generalisable and transferable to other undergraduate medical modules for global health learning. Further integration of the GHCR into the existing medical curriculum at the Otago Medical School in partnership with overseas medical school is recommended.

References

1. Abedini, N. C., Danso-Bamfo, S., Moyer, C.A., Danso, K.A., Makiharju, H., Donkor, P., Johnson, T.R., Kolars, J.C. (2014). Perceptions of Ghanaian medical students completing a clinical elective at the University of Michigan Medical School. *Academic Medicine, 89*(7), 1014-1017. doi:10.1097/ACM.0000000000000291

2. Adams, L. V., Wagner, C. M., Nutt, C. T., & Binagwaho, A. (2016). The future of global health education: training for equity in global health. *BMC Medical Education, 16*(1), 296. doi:10.1186/s12909-016-0820-0

3. Ambrose, M., Murray, L., Handoyo, N. E., Tunggal, D., & Cooling, N. (2017). Learning global health: a pilot study of an online collaborative intercultural peer group activity involving medical students in Australia and Indonesia. *BMC Medical Education, 17*(1), 10. doi:10.1186/s12909-016-0851-6

4. Arya, N. (2004). Peace through health II: a framework for medical student education. *Medicine, Conflict, and Survival, 20*(3), 258-262. doi:10.1080/1362369042000248848

5. Battat, R., Seidman, G., Chadi, N., Chanda, M. Y., Nehme, J., Hulme, J., . . . Brewer, T. F. (2010). Global health competencies and approaches in medical education: a literature review. *BMC Medical Education, 10*, 94. doi:10.1186/1472-6920-10-94

6. Beaglehole, R., & Bonita, R. (2010). What is global health? *Global Health Action, 3*. doi:10.3402/gha.v3i0.5142

7. Betancourt, J. R. (2003). Cross-cultural medical education: conceptual approaches and frameworks for evaluation. *Academic Medicine, 78*(6), 560-569.

8. Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education, 32*(3), 347-364. doi:10.1007/bf00138871

9. Boelen, C., & Heck, J. E. (1995). Defining and measuring the social accountability of medical schools. Geneva: World Health Organization.

10. Bongaarts, J. (2009). Human population growth and the demographic transition. *Philosophical Transactions of the Royal Society of London. Series B, 364*(1532), 2985-2990. doi:10.1098/rstb.2009.0137

11. Boud, D., Cohen, R., & Sampson, J. (2006). Peer Learning and Assessment. *Assessment & Evaluation in Higher Education, 24*(4), 413-426. doi:10.1080/0260293990240405

12. Boutayeb, A. (2006). The double burden of communicable and non-communicable diseases in developing countries. *Royal Society of Tropical Medicine and Hygiene, 100*(3), 191-199. doi:10.1016/j.trstmh.2005.07.021

13. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. doi:10.1191/1478088706qp063oa

14. Braveman, P., & Gottlieb, L. (2014). The social determinants of health: it's time to consider the causes of the causes. *Public Health Reports, 129 Suppl 2*, 19-31. doi:10.1177/00333549141291S206

15. Briand, S., Bertherat, E., Cox, P., Formenty, P., Kieny, M. P., Myhre, J. K., . . . Dye, C. (2014). The international Ebola emergency. *New England Journal of Medicine, 371*(13), 1180-1183. doi:10.1056/NEJMp1409858

16. Brown, T. M., Cueto, M., & Fee, E. (2006). The World Health Organization and the Transition From "International" to "Global" Public Health. *American Journal of Public Health, 96*(1), 62-72. doi:10.2105/AJPH.2004.050831

17. Bruntdland, G. (2001, 2001). *Speech at United Nations Associations Global Leadership Awards.*, New York, USA.

18. Bryman, A. (2012). *Social Research Methods* (4th ed.). New York: Oxford University Press.

19. Cartledge, P., Miller, M., & Phillips, B. (2013). The use of social-networking sites in medical education. *Medical Teacher, 35*(10), 847-857. doi:10.3109/0142159X.2013.804909

20. Correa-Rotter, R., Naicker, S., Katz, I. J., Agarwal, S. K., Herrera Valdes, R., Kaseje, D., Rodriguez-Iturbe, B., Shaheen, F., Sitthi-Amorn, C. (2004). Demographic and epidemiologic transition in the developing world: role of albuminuria in the early diagnosis and prevention of renal and cardiovascular disease. *Kidney International Supplements*(92), S32-37. doi:10.1111/j.1523-1755.2004.09208.x

21. Crane, J. (2011). Scrambling for Africa? Universities and global health. *The Lancet, 377*(9775), 1388-1390. doi:10.1016/s0140-6736(10)61920-4

22. Creswell, J. W. (2003). *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: SAGE Publications, Inc.

23. Deng, C. (2009). Fiji Village Project; Treating the patient, the water or the village? *New Zealand Medical Student Journal, 10*, 20-21.

24. Dennick, R., & Spencer, J. (2010). *Medical Education: Theory and Practice*: Churchill Livingstone.

25. Dewey, J. (1963). *Experience and education*. New York: Collier.

26. Disney, G., Teng, A., Atkinson, J., Wilson, N., Blakely, T. (2017). Changing ethnic inequalities in mortality in New Zealand over 30 years: linked cohort studies with 68.9 million person-years of follow-up. *Population Health Metrics, 15*(1). doi:10.1186/s12963-017-0132-6

27. Drain, P. K., Primack, A., Hunt, D. D., Fawzi, W. W., Holmes, K. K., & Gardner, P. (2007). Global Health in Medical Education A Call for More Training and Opportunities. *Acadamic Medicine, 82*(3), 226-230. doi:10.1097/ACM.0b013e3180305cf9

28. Duffy, T. P. (2011). The Flexner Report — 100 Years Later. *The Yale Journal of Biology and Medicine, 84*(3), 269-276.

29. Duvivier, R., Mansouri, M., Iemmi, D., & Rukavina, S. (2010). Migrants and the right to health: the students' perspective. *The Lancet, 375*(9712), 376. doi:10.1016/s0140-6736(10)60164-x

30. Eaton, D. M., Redmond, A., & Bax, N. (2011). Training healthcare professionals for the future: internationalism and effective inclusion of global health training. *Medical Teacher, 33*(7), 562-569. doi:10.3109/0142159X.2011.578470

31. Edwards, E., & Holland, J. (2013). *What is Qualitative Interviewing?* London: Bloomsbury.

32. Evert, J., Mautner, D., Hoffman, I. (2008). *Developing Global Health Curricula: A Guidebook For US & Canadian Medical Schools. AMSA, GHEC, IFMSA-USA and R4WH.*

33. Florek, A. G., & Dellavalle, R. P. (2016). Case reports in medical education: a platform for training medical students, residents, and fellows in scientific writing and critical thinking. *Journal of Medical Case Reports, 10*, 86. doi:10.1186/s13256-016-0851-5

34. Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., . . . Zurayk, H. (2010). Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. *Lancet, 376*(9756), 1923-1958. doi:10.1016/S0140-6736(10)61854-5

35. Frenk, J., Gómez-Dantés, O., Moon, S. (2014). From sovereignty to solidarity: a renewed concept of global health for an era of complex interdependence. *The Lancet, 383*(9911), 94-97. doi:10.1016/s0140-6736(13)62561-1

36. Fuster, V., Kelly, B. B., & Vedanthan, R. (2011). Promoting global cardiovascular health: moving forward. *Circulation, 123*(15), 1671-1678. doi:10.1161/CIRCULATIONAHA.110.009522

37. Gebbie, K. M. (2004). Competency-to-Cirriculum Toolkit: Developing Curricula for Public Health Workers. *Colombia University School of Nursing and Association of Schools of Preventive Medicine*.

38. General Medical Council. (2002). Tomorrow's Doctors: Recommendations on Undergraduate Medical Education. London, UK: General Medical Council.

39. Global Consensus on Social Accountability of Medical Schools. (2010). Global Consensus for Social Accountability of Medical Schools. Retrieved from http://healthsocialaccountability.org/

40. Gogus, A. (2012). Peer Learning and Assessment. In N. M. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp. 2572-2576). Boston, MA: Springer US.

41. Goldner, B. W., & Bollinger, R. C. (2012). Global health education for medical students: New learning opportunities and strategies. *Medical Teacher, 34*(1), e58-63. doi:10.3109/0142159X.2012.638008

42. Google Map: Nepal. (2017). Retrieved from https://www.google.co.nz/maps/place/Nepal/@28.3237129,81.8773193,7z/data=!4m5!3m4!1s0x3995e8c77d2e68cf:0x34a29abcd0cc86de!8m2!3d28.394857!4d84.124008

43. Google Map: Nepal, New Zealand and Samoa. (2017). Retrieved from https://www.google.com/maps/d/edit?hl=en&mid=1t3rkZbaQCQVyCBLzGbxFAVWfZRnB4_x5&ll=-4.120577502915253%2C118.19860126562503&z=3

44. Gopfert, A., Mohamedbhai, H., Mise, J., Driessen, A., Shakil, A., Fitzmaurice, A., & Graham, W. (2014). Do medical students want to learn about global health? *Global Health Action, 7*, 23943. doi:10.3402/gha.v7.23943

45. Greenberg, A. (2004). Navigating the Sea of Research on Video Conferencing-Based Distance Education: Polycom Inc.

46. Gross, J. L., de Azevedo, M. J., Silveiro, S. P., Canani, L. H., Caramori, M. L., & Zelmanovitz, T. (2004). Diabetic Nephropathy: Diagnosis, Prevention, and Treatment. *Diabetes Care, 28*(1), 164-176. doi:10.2337/diacare.28.1.164

47. Group, W. B. (2017). Life expectancy at birth, total (years). Retrieved from http://data.worldbank.org/indicator/SP.DYN.LE00.IN

48. Guest, G., Bunce, A., & Johnson, L. (2016). How Many Interviews Are Enough? *Field Methods, 18*(1), 59-82. doi:10.1177/1525822x05279903

49. Hanson, L. (2008). Global Citizenship, Global Health, and the Internationalization of Curriculum. *Journal of Studies in International Education, 14*(1), 70-88. doi:10.1177/1028315308323207

50. Hanson, L., Harms, S., & Plamondon, K. (2010). Undergraduate International Medical Electives: Some Ethical and Pedagogical Considerations. *Journal of Studies in International Education, 15*(2), 171-185. doi:10.1177/1028315310365542

51. Haq, C., Rothenberg, D., Gjerde, C., Bobula, J., Wilson, C., Bickley, L., Cardelle, A., Joseph, A. (2000). New World Views: Preparing Physicians in Training for Global Health Work. *Family Medicine, 38*(8), 566-572.

52. Harmer, A., Lee, K., & Petty, N. (2015). Global health education in the United Kingdom: a review of university undergraduate and postgraduate programmes and courses. *Public Health, 129*(6), 797-809. doi:10.1016/j.puhe.2014.12.015

53. Hiltz, S. R., Johnson, K., & Turoff, M. (1986). Experiments in Group Decision Making Communication Process and Outcome in Face-to-Face Versus Computerized Conferences. *Human Communication Research, 13*(2), 225-252. doi:10.1111/j.1468-2958.1986.tb00104.x

54. Horton, R. (2010). A new epoch for health professionals' education. *The Lancet, 376*(9756), 1875-1877. doi:10.1016/s0140-6736(10)62008-9

55. Houpt, E. R., Pearson, R. D., & Hall, T. L. (2007). Three domains of competency in global health education: recommendations for all medical students. *Academic Medicine, 82*(3), 222-225. doi:10.1097/ACM.0b013e3180305c10

56. Howden-Chapman, P., Tobias, M. (Ed.) (2000). *Social Inequalities in Health: New Zealand 1999*. Wellington, New Zealand: Ministry of Health.

57. International Federation for Medical Students' Association. (2014). The Global Health Toolkit. Retrieved from https://issuu.com/ifmsa/docs/thinkglobal-toolkit_final

58. International Federation for Medical Students' Association. (2017). IFMSA: Who we are. Retrieved from http://globalhealth.amsa.org.au/about/international-representation/ifmsa/

59. Islam, S. M., Purnat, T. D., Phuong, N. T., Mwingira, U., Schacht, K., & Froschl, G. (2014). Non-communicable diseases (NCDs) in developing countries: a symposium report. *Global Health, 10*, 81. doi:10.1186/s12992-014-0081-9

60. Jamison, D. T., Summers, L. H., Alleyne, G., Arrow, K. J., Berkley, S., Binagwaho, A., . . . Yamey, G. (2013). Global health 2035: a world converging within a generation. *The Lancet, 382*(9908), 1898-1955. doi:10.1016/s0140-6736(13)62105-4

61. Jeffrey, J., Dumont, R. A., Kim, G. Y., & Kuo, T. (2011). Effects of international health electives on medical student learning and career choice: results of a systematic literature review. *Fam Med., 43*(1), 21-28.

62. Jogerst, K., Callender, B., Adams, V., Evert, J., Fields, E., Hall, T., . . . Wilson, L. L. (2015). Identifying interprofessional global health competencies for 21st-century health professionals. *Annals of Global Health, 81*(2), 239-247. doi:10.1016/j.aogh.2015.03.006

63. Johnson, D. W., & Johnson, R. T. (1989). *Cooperation and learning: theory and research*. Edina, MN: Interaction Book Company.

64. Johnson, D. W., Johnson, R.T. (1999). *Learning together and alone: cooperative, competitive, and individualistic learning* (5th ed.). Boston: Allyn & Bacon.

65. Johnson, O., Bailey, S. L., Willott, C., Crocker-Buque, T., Jessop, V., Birch, M., . . . Yudkin, J. S. (2012). Global health learning outcomes for medical students in the UK. *The Lancet, 379*(9831), 2033-2035. doi:10.1016/s0140-6736(11)61582-1

66. Jones, C. P. (2001). Invited Commentary: "Race," Racism, and the Practice of Epidemiology. *American Journal of Epidemiology, 154*(4), 299-304. doi:10.1093/aje/154.4.299

67. Kanter, S. L. (2008). Global health is more important in a smaller world. *Academic Medicine, 83*(2), 115-116. doi:10.1097/01.ACM.0000305155.66318.58

68. Kassebaum, D. G. (1989). Change in medical education: the courage and will to be different. *Academic Medicine, 64*(8), 446-447.

69. Keynejad, R., Ali, F. R., Finlayson, A. E., Handuleh, J., Adam, G., Bowen, J. S., . . . Whitwell, S. (2013). Telemedicine for peer-to-peer psychiatry learning between U.K. and Somaliland medical students. *Academic Psychiatry, 37*(3), 182-186. doi:10.1176/appi.ap.11080148

70. Keynejad, R. C. (2016). Global health partnership for student peer-to-peer psychiatry e-learning: Lessons learned. *Global Health, 12*(1), 82. doi:10.1186/s12992-016-0221-5

71. Khan, O. A., Guerrant, R., Sanders, J., Carpenter, C., Spottswood, M., Jones, D. S., . . . Wright, S. (2013). Global health education in U.S. medical schools. *BMC Medical Education, 13*, 3. doi:10.1186/1472-6920-13-3

72. Kimball, A. M., Arima, Y., & Hodges, J. R. (2005). Trade related infections: farther, faster, quieter. *Global Health, 1*(1), 3. doi:10.1186/1744-8603-1-3

73. Knowles, M. S. (1973). The adult learner: a neglected species. Houston: Gulf Publishing.

74. Knowles, M. S. (1975). Self-directed learning: A guide for learners and teachers. New York: Association Press.

75. Koivusalo, M. (2006). The impact of economic globalisation on health. *Theoretical Medicine and Bioethics, 27*(1), 13-34. doi:10.1007/s11017-005-5757-y

76. Koplan, J. P., Bond, T. C., Merson, M. H., Reddy, K. S., Rodriguez, M. H., & Sewankambo, N. K. (2009). Towards a common definition of global health. *The Lancet, 373*. doi:10.1016/s0140-6736(09)60332-9

77. Kreijns, K., Kirschner, P. A., & Jochems, W. (2003). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: a review of the research. *Computers in Human Behavior, 19*(3), 335-353. doi:10.1016/s0747-5632(02)00057-2

78. Lajoie, S. P., Hmelo-Silver, C. E., Wiseman, J. G., Chan, L. K., Lu, J., Khurana, C., . . . Kazemitabar, M. (2014). Using Online Digital Tools and Video to Support International Problem-Based Learning. *Interdisciplinary Journal of Problem-Based Learning, 8*(2). doi:10.7771/1541-5015.1412

79. Lamba, P. (2011). Teleconferencing in medical education: a useful tool. *Australasian Medical Journal, 4*(8), 442-447. doi:10.4066/AMJ.2011.823

80. Lee, K. (2004). *Globalization and Health: an introduction*: Palgrave Macmillan UK.

81. Lencucha, R., & Mohindra, K. (2014). A snapshot of global health education at North American universities. *Global Health Promotion, 21*(1), 63-67. doi:10.1177/1757975913514464

82. Levett-Jones, T. L. (2005). Self-directed learning: implications and limitations for undergraduate nursing education. *Nurse Education Today, 25*(5), 363-368. doi:10.1016/j.nedt.2005.03.003

83. Lindeman, E. C. (1926). *The meaning of adult education*. New York: New Republic.

84. Liu, Y., Zhang, Y., Liu, Z., & Wang, J. (2015). Gaps in studies of global health education: an empirical literature review. *Global Health Action, 8*(1), 25709. doi:10.3402/gha.v8.25709

85. Macfarlane, S. B., Agabian, N., Novotny, T. E., Rutherford, G. W., Stewart, C. C., & Debas, H. T. (2008). Think globally, act locally, and collaborate internationally: global health sciences at the University of California, San Francisco. *Academic Medicine, 83*(2), 173-179. doi:10.1097/ACM.0b013e31816096e3

86. Madey, D. L. (1982). Some Benefits of Integrating Qualitative and Quantitative Methods in Program Evaluation, with Illustrations. *Educational Evaluation and Policy Analysis, 4*(2), 223-236. doi:10.3102/01623737004002223

87. Mann, K., Dornan, T., & Teunissen, P. W. (2010). *Medical Education: Theory and Practice*: Churchill Livingstone.

88. Marmot, M. (2005). Social determinants of health inequalities. *The Lancet, 365*(9464), 1099-1104. doi:10.1016/s0140-6736(05)74234-3

89. Marriott, L., Sim, D. . (2014). Indicators of Inequality for Māori and Pacific People. Wellington: University of Victoria.

90. McHugh, M. L. (2013). The Chi-square test of independence. *Biochemia Medica*, 143-149. doi:10.11613/bm.2013.018

91. McKimm, J., & McLean, M. (2011). Developing a global health practitioner: time to act? *Medical Teacher, 33*(8), 626-631. doi:10.3109/0142159X.2011.590245

92. McMichael, A. J., & Beaglehole, R. (2000). The changing global context of public health. *The Lancet, 356*(9228), 495-499. doi:10.1016/s0140-6736(00)02564-2

93. Medical Students for Global Awareness. (2016). New Zealand Medical Students' Association (NZMSA) and Medical Students for Global Awareness (MSGA): Healthy Homes Guarantee Bill (No 2) – Submission to the Government

Administration Select Committee. Retrieved from http://msganz.com/new-zealand-medical-students-association-nzmsa-and-medical-students-for-global-awareness-msga-healthy-homes-guarantee-bill-no-2-submission-to-the-government-administration-select-com/

94. Medical Students for Global Awareness. (2017). About MSGA: Medical Students for Global Awareness. Retrieved from http://msganz.com/

95. Merson, M. H., Black, R.E, Mills, A. (2006). *International Public Health: Diseases, Programs, Systems and Policies* (2nd ed.). Sudbury, Massachusetts: Jones & Bartlett Learning.

96. Mezirow, J. (1990). *Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning*. San Francisco: Jossey- Bass.

97. Miller, S. (2009). Cultural humility is the first step to becoming global care providers. *Journal of Obstetric, Gynecologic & Neonatal Nursing, 38*(1), 92-93. doi:10.1111/j.1552-6909.2008.00311.x

98. Murphy, R., Clissold, E., & Keynejad, R. C. (2017). Problem-based, peer-to-peer global mental health e-learning between the UK and Somaliland: a pilot study. *Evidence Based Mental Health, 20*, 142-146.

99. Neufeld, V. R., Norman, G. R., Feightner, J. W., & Barrows, H. S. (1981). Clinical problem-solving by medical students: a cross-sectional and longitudinal analysis. *Medical Education, 15*(5), 315-322. doi:10.1111/j.1365-2923.1981.tb02495.x

100. Niemantsverdriet, S., Majoor, G. D., van der Vleuten, C. P., & Scherpbier, A. J. (2004). 'I found myself to be a down to earth Dutch girl': a qualitative study into learning outcomes from international traineeships. *Medical Education, 38*(7), 749-757. doi:10.1111/j.1365-2929.2004.01843.x

101. Norman, G. (2012). Medical education: past, present and future. *Perspectives of Medical Education, 1*(1), 6-14. doi:10.1007/s40037-012-0002-7

102. O'Shea, E. (2003). Self-directed learning in nurse education: a review of the literature. *Journal of Advanced Nursing, 43*(1), 62-70. doi:10.1046/j.1365-2648.2003.02673.x

103. Onishi, H. (2008). The Role of Case Presentation for Teaching and Learning Activities. *The Kaohsiung Journal of Medical Sciences, 24*(7), 356-360. doi:10.1016/s1607-551x(08)70132-3

104. Onwuegbuzie, A. J., & Leech, N. L. (2005). On Becoming a Pragmatic Researcher: The Importance of Combining Quantitative and Qualitative Research Methodologies. *International Journal of Social Research Methodology, 8*(5), 375-387. doi:10.1080/13645570500402447

105. Otago Medical School. (2015). A Masterplan for the Otago Medical Curriculum of the Future (pp. 21). Dunedin: Otago Medical School.

106. Pang, T., & Guindon, G. E. (2004). Globalization and risks to health. *EMBO Reports, 5 Spec No*, S11-16. doi:10.1038/sj.embor.7400226

107. Peluso, M. J., Encandela, J., Hafler, J. P., & Margolis, C. Z. (2012). Guiding principles for the development of global health education curricula in undergraduate medical education. *Medical Teacher, 34*(8), 653-658. doi:10.3109/0142159X.2012.687848

108. Peluso, M. J., Kellett, A., Davies, D., Samaan, J., Brewer, T., Van Schalkwyk, S., . . . Rohrbaugh, R. (2017a). Towards a Universal Medical Education Global Health Curriculum: Update on the Bellagio Global Health Education Initiative. *Annals of Global Health, 83*(1), 49-50. doi:10.1016/j.aogh.2017.03.107

109. Peluso, M. J., van Schalkwyk, S., Kellett, A., Brewer, T. F., Clarfield, A. M., Davies, D., . . . Rohrbaugh, R. M. (2017b). Reframing undergraduate medical education in global health: Rationale and key principles from the Bellagio Global Health Education Initiative. *Medical Teacher, 39*(6), 639-645. doi:10.1080/0142159X.2017.1301654

110. Piaget, J. (1973). *To understand is to invent*. New York: Grossman.

111. Plano Clark, V. L., & Creswell, J. W. (2011). *Designing and conducting mixed methods research*. Thousand Oaks, CA: SAGE Publications, Inc.

112. Porter, R. (1997). *The Greatest Benefit to Mankind: A Medical History of Humanity (The Norton History of Science)*. New York: W W Norton & Company.

113. Procter, P. M., Brixey, J. J., Honey, M. L., & Todhunter, F. (2016). Social Media and Population Health Virtual Exchange for Senior Nursing Students: An International Collaboration. *Studies in Health Technology and Informatics, 225*, 975-976.

114. Reid, P., Robson, B., Jones, C.P. (2000). Disparities in health: common myths and uncommon truths. *Pacific Health Dialog, 7*(1), 38-47.

115. Sadler, L., Priest, P., Peters, J., Crengle, S., Jackson, R. (2004). *Cervical Cancer Audit report – screening of women with cervical cancer 2000–2002*. Wellington: Ministry of Health.

116. Saltiel, I. M. (1998). Defining Collaborative Partnerships. *New Directions for Adult and Continuing Education, 1998*(79), 5-11. doi:10.1002/ace.7901

117. Singh, S., McCool, J., Weller, J., & Woodward, A. (2012). Medical Education in the 21st Century: Students Driving the Global Agenda. *Education Research International, 2012*, 1-5. doi:10.1155/2012/185904

118. Smith, S. R. (2009). AMEE guide No. 14: Outcome-based education: Part 2-Planning, implementing and evaluating a competency-based curriculum. *Medical Teacher, 21*(1), 15-22. doi:10.1080/01421599979978

119. Stütz, A., Green, W., McAllister, L., & Eley, D. (2014). Preparing Medical Graduates for an Interconnected World. *Journal of Studies in International Education, 19*(1), 28-45. doi:10.1177/1028315314536991

120. Sullivan, N. (2017). International clinical volunteering in Tanzania: A postcolonial analysis of a Global Health business. *Global Public Health*, 1-15. doi:10.1080/17441692.2017.1346695

121. Tagawa, M. (2008). Physician Self-directed Learning and Education. *The Kaohsiung Journal of Medical Sciences, 24*(7), 380-385. doi:10.1016/s1607-551x(08)70136-0

122. Tan, N., & Sutton, A. (2010). *Medical Education: Theory and Practice*: Churchill Livingstone.

123. Tashakkori, A., & Teddlie, C. (2003). *Handbook of Mixed Methods in Social & Behavioral Research*. Thousand Oaks: SAGE.

124. Taylor, M. (2016). Students dress up for marathon. *Otago Daily Times*. Retrieved from https://www.odt.co.nz/news/campus/university-of-otago/students-dress-marathon

125. Tervalon, M., & Murray-García, J. (1998). Cultural humility versus cultural competence: a critical distinction in defining physician training outcomes in multicultural education. *Journal of Health Care for the Poor and Underserved, 9*(2), 117-125.

126. Thistlethwaite, J. E., Davies, D., Ekeocha, S., Kidd, J.M., MacDougall, C., Matthews, P., Purkis, J., Clay, D. (2012). The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. *Medical Teacher, 34*(6), e421-444. doi:10.3109/0142159X.2012.680939

127. Tilley, S. (2003). Transcription work: learning through coparticipation in research practices. *International Journal of Qualitative Studies in Education, 16*(6), 835-851. doi:10.1080/09518390310001632171

128. Topping, K., & Ehly, S. (1998). *Peer-assisted learning*. Mahwah: Lawrence Erlbaum Associates.

129. United Nations. (2015). The Sustainable Development Agenda. Retrieved from http://www.un.org/sustainabledevelopment/development-agenda/

130. US Centre for Disease Control. (2016). 2014-2016 Ebola Outbreak in West Africa (Vol. 2017): US Centre for Disease Control

131. Villafuerte-Galvez, J., Curioso, W. H., & Miranda, J. J. (2008). The role of medical students in the fight to control neglected tropical diseases: a view from Peru. *PLOS Neglected Tropical Diseases, 2*(9), e292. doi:10.1371/journal.pntd.0000292

132. Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes*. Cambridge, MA.: Harvard University Press.

133. Walker, B. (1989). "The Future of Public Health": The Institute of Medicine's 1988 Report. *Journal of Public Health Policy, 10*(1), 19. doi:10.2307/3342941

134. Winslow, C. E. (1920). The Untilled Fields of Public Health. *Science, 51*(1306), 23-33. doi:10.1126/science.51.1306.23

135. World Federation for Medical Education. (2003). *Global standards for medical education*. Retrieved from Copenhagen, Denmark:

136. World Health Organization. (2003). *The World health report: Today's challenges* (1020 3311). Retrieved from Geneva:

137. World Health Organization. (2013). Global action plan for the prevention and control of noncommunicable diseases 2013-2020 (pp. 55). Geneva: World Health Organization.

138. World Health Organization. (2014). Statement on the 1st meeting of the IHR Emergency Committee on the 2014 Ebola outbreak in West Africa [Press release]. Retrieved from http://www.who.int/mediacentre/news/statements/2014/ebola-20140808/en/

139. World Health Organization. (2016). Ebola response roadmap situation report. Geneva: WHO, 2016. Geneva: World Health Organization.

140. Yvonne, M. F. (2009). Doing Mixed Methods Research Pragmatically: Implications for the Rediscovery of Pragmatism as a Research Paradigm. *Journal of Mixed Methods Research, 4*(1), 6-16. doi:10.1177/1558689809349691

Appendix 1: Ethics Approval Letter from University of Otago and National University of Samoa

D16/419

Academic Services
Manager, Academic Committees, Mr Gary Witte

19 December 2016

Dr A Miller
Department of Pathology (ChCh)
10 Oxford Terrace
University of Otago, Christchurch
University of Otago Medical School

Dear Dr Miller,

I am writing to confirm for you the status of your proposal entitled **""Virtual" Socialisation and Case-Discussion between linked Medical Student groups in Nepal-NZ and NZ-Samoa during collaborative Global Health Learning - Why and How?"**, which was originally received on December 7, 2016. The Human Ethics Committee's reference number for this proposal is **D16/419**.

The above application was Category B and had therefore been considered within the Department or School. The outcome was subsequently reviewed by the University of Otago Human Ethics Committee. The outcome of that consideration was that the proposal was approved.

Approval is for up to three years from the date of HOD approval. If this project has not been completed within three years of this date, re-approval must be requested. If the nature, consent, location, procedures or personnel of your approved application change, please advise me in writing.

Yours sincerely,

Mr Gary Witte
Manager, Academic Committees
Tel: 479 8256
Email: gary.witte@otago.ac.nz

D16/419

Academic Services
Manager, Academic Committees, Mr Gary Witte

7 April 2017

Dr A Miller
Department of Pathology (ChCh)
10 Oxford Terrace
University of Otago, Christchurch
University of Otago Medical School

Dear Dr Miller,

I am again writing to you concerning your proposal entitled **"Research Project for BMedSci (Hons) Global Health Classroom - How and Why"**, Ethics Committee reference number **D16/419**.

Thank you for your request for amendment to allow the student researcher, Roshit Bothara to travel to Samoa to carry out face to face interviews with medical students at the National University of Samoa, Faculty of Medicine. Thank you for providing the Student Travel Overseas Fieldwork and Safety Form and for confirming that the student will travel with Associate Professor Sopoaga (Associate Dean (Pacific), Division of Health Sciences). The amendment is approved.

Your proposal continues to be fully approved. If the nature, consent, location, procedures or personnel of your approved application change, please advise me in writing. I hope all goes well for you with your upcoming research.

Yours sincerely,

Mr Gary Witte
Manager, Academic Committees
Tel: 479 8256
Email: gary.witte@otago.ac.nz

c.c. Professor M Kennedy Head Department of Pathology (ChCh)

LE IUNIVESITE AOAO O SAMOA
NATIONAL UNIVERSITY OF SAMOA

University Research & Ethics Committee

"IA AO SAMOA"

IS ETHICAL APPROVAL NEEDED FOR MY RESEARCH?
CHECKLIST AND DECLARATION

1.	**PROJECT TITLE:**	
	Global Health Classroom(GHCR) – How and Why?	
	Background information:	
	Faculty/Department:	Faculty of Medicine (FOM), National University of Samoa (NUS) and Otago Medical School (OMS), New Zealand
	No. of Researchers:	10 Researchers are involved in this collaborative project
	Duration of Project:	Feb – Dec 2017
2.	**BRIEF DESCRIPTION OF PROJECT:** Briefly describe the major aim(s) of the project (up to 50 words)	
	To understand medical student perspective of global health, and evaluate methods of collaborative learning between medical students at NUS and OMS in the GHCR, with a particular focus on global health. Videoconferencing between NUS and OMS will be utilised and other appropriate IT solutions will be explored.	
3.	**RESEARCHER (APPLICANT)**	
	Principal Researcher:	Roshit Bothara
	Associate Researcher(s)	Dr. Andrew Miller, Dr Susan Jack, Dr Malama Tafuna'i, Prof David Murdoch, Assoc. Prof Philip Pattemore, Dr Tony Walls, Dr Ashis Shrestha, Prof Tim Wilkinson, Faumuina Associate Professor Faafetai (Tai) Sopoaga, Mrs Jen Desroziers
	Faculty/ Organisation/ Department	**Otago Medical School, University of Otago; Faculty of Medicine, National University of Samoa** — Phone/ ext: 64 3 364 0550
	Email	bothro358@student.otago.ac.nz; **andew.miller@otago.ac.nz**

4. DECLARATION:

The information supplied is, to the best of my knowledge and belief, accurate. I/We have considered the ethical issues involved in this research and believe that I have adequately addressed them. I/We have read the current guidelines for ethics approval for research project involving human participants approved by the NUS Research & Ethics Committee (UREC), and clearly understand my/our obligations and the rights of participants. I/We understand that if the methods used in this research change in any way I must inform the UREC and obtain their written approval before proceeding. I/We will comply with all other NUS policies.

	Signatures	Dates
Principal researcher:	Roshit Bara.	31 March 2017
Other Research: (if applicable)	Andrew P Miller	31 March 2017

I have read this form, understood the nature of the research project and declare that it complies with all ethical standards and policies. It is appropriate for this research to be conducted.

	Signature	Date
Research & Development Manager, Centre for		3/04/17

Appendix 2: Participant Consent Form

Research Project for BMedSci(Hons):
Global Health Classroom – How and Why?

INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this Research Project. Please read this information sheet carefully

Definitions
Global Health is an area of study, research and practice that places a priority on improving health and achieving health equality for all people worldwide.

"Informal Learning" is student-to-student learning outside of formal learning (i.e. outside of lectures, tutorials, etc.).

What is the Aim of the Project?

The aim of the Global Health Classroom (GHCR) project is to:

- Evaluate the learning initiative process of the GHCR.
- Evaluate the learning outcomes of students in the GHCR.
- Evaluate whether social media for informal learning of global health also leads to the added benefit of socialisation between medical students in different countries and contexts.

What Types of Participants are being sought?

We are seeking medical students of any age, gender, ethnicity or year of study. Participants are being recruited at the University of Otago, Christchurch (UOC), Dunedin School of Medicine (DSM), Faculty of Medicine, National University of Samoa (NUS) and Patan Academy of Health Sciences, Nepal (PAHS).

Students in the following groups will have GHCR incorporated into their course, however their feedback via the pre-questionnaire, post-questionnaire and in-depth interview will **be entirely voluntary**:

- Year 5 Paediatrics, University of Otago, Christchurch
- Year 4 Public Health, University of Otago, Dunedin
- Year 4, Year 5 and Year 6, Faculty of Medicine, National University of Samoa (NUS)
- Year 6, Patan Academy of Health Sciences (PAHS), Nepal

What will Participants be Asked to Do?

You will be asked to participate in the Global Health Classroom (GHCR) as part of your course.

Participants who consent to participate in the Research Project will be asked to **complete a pre-questionnaire, a post-questionnaire - this will be completely voluntary and has no bearing on any course assessments**. Time input for the pre- and post-questionnaire will be around 10-15 minutes. You will also be asked in the post-questionnaire if you would be willing to do a follow up interview regarding your experience of the GHCR, as part of the Research Project – **this is also completely voluntary and only a small number of students may be needed for an interview**. Consent can be withdrawn at any time by participants if they no longer wish to participate.

Participants in the GHCR also have opportunity to interact with medical students in the other medical school via a closed Facebook group which will be set up prior to the collaboration. Faculty will not be enrolled or access the Closed Facebook Group for the GHCR**. Enrolment in the Closed Facebook Group for the GHCR is voluntary and participating students will need to agree to abide by <u>Social Media and Informal Learning Guidelines for the GHCR</u>**, which are attached to the consent form. Participants who agree to be enrolled in the Closed Facebook Group for GHCR will need to sign one copy of the Guidelines (a copy for you to keep is provided).

What Data or Information will be collected and what use will be made of it?

Individual names will not be required for the questionnaires but will be useful for any participant who agrees to a one-on-one interview – as noted above, this interview is not a requirement for participants and only a small number of participants is needed.

All the evaluation data will be anonymized. At all times anonymity and confidentiality will be prioritised. The results of the research may be published and will be available in the University of Otago Library (Dunedin, New Zealand).

The survey will have questions relating to your experience of the GHCR, particularly your experience of the GHCR design and your learning outcomes.

Can Participants change their mind and withdraw from the project?

Students are expected to participate in the GHCR as part of their course.

Participation in the Research, via the pre-questionnaire and post-questionnaire is voluntary and can be withdrawn at any time.

What if Participants have any Questions about the Research Project and the Questionnaires?

If you have any questions about our Research Project, please contact either: -

Roshit Bothara	or	*Andrew Miller*
Department of Pathology		Department of Pathology, UOC
botro358@student.otago.ac.nz		03 364 0115
		andrew.miller@otago.ac.nz

This study has been approved by the Department stated above. However, if you have any concerns about the ethical conduct of the research you may contact the University of Otago Human Ethics Committee through the Human Ethics Committee Administrator (ph. 03 479-8256). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

Social Media and Informal Learning Guidelines for the GHCR

The "Global Health Classroom (GHCR)" project will have a closed Facebook group as a medium for "informal learning" (i.e. student-to-student learning) of global health related to the case studies and socialisation.

Please Note: The de-identified GHCR case studies will only be uploaded to the password protected GHCR Med Moodle site – you will have been given the link to sign on to this site to view the case studies. The closed Facebook group is for informal, collaborative learning and shared work on the global health questions and tasks.

In your use of the closed Facebook group **you must observe all of the points below** as requirements for your participation in the GHCR:

- **DO NOT** upload any case material or specific clinical information onto Facebook.
- **DO NOT** copy and paste any of the case material into Facebook posts. You may post comments into the Forums on the GHCR Med Moodle page.
- **DO NOT** post PowerPoint slides onto Facebook. The PowerPoint slides related to your collaborative informal learning of global health are to be uploaded onto the GHCR Med Moodle site.

DO use the closed Facebook group for:

Learning

- informal collaborative learning with your medical student colleagues participating in the GHCR on specified discussion points and questions
- sharing resource links such as: guidelines, government sites, videos on healthcare in your country, WHO sites/links, etc.

Socialisation

- introduce yourself to each other and introduce students from other medical schools to your school and its environment
- getting to know the other students, including sharing photos (hospital, city, beaches, food, fishing, houses, student accommodation)

Please, enjoy the experience, learn something about each other, your cultures and lifestyles. Learn, collaborate and socialise! If you have any questions, please email Roshit Bothara botro358@student.otago.ac.nz or Andrew Miller andrew.miller@otago.ac.nz .

For further reading related to Social Media use in the Medical Profession here are some links:

- "Using social media: practical and ethical guidance for doctors and medical students." published by British Medical Association https://www.bma.org.uk/advice/employment/ethics/medical-students-ethics-toolkit/12-students-and-social-media
- "Social Media and the Medical Professional: A guide to online professionalism for medical practitioners and medical students" published by the Australian Medical Association Council of Doctors-in Training, the New Zealand Medical Association Doctors-in-Training, the New Zealand Medical Students' Association and the Australian Medical Students' Association www.nzmsa.org.nz/wp-content/uploads/2008/08/Social-Media-Guide.pdf

I have read the "*Social Media and Informal Learning Guidelines for the GHCR"* and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that: -

1) I am agreeing to participate in the Closed Facebook GHCR Group.
2) I agree to retain the "*Social Media and Informal Learning Guidelines for the GHCR*" for the duration of the Research Project.
3) I agree to abide by the "*Social Media and Informal Learning Guidelines for the GHCR*".

....

(Signature of participant) (Date)

.....

(Please print your name)

Research Project for BMedSci(Hons):
"Global Health Classroom – How and Why?"

I have read the Information Sheet concerning this Research Project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that: -

1. My participation in the pre-questionnaire, post-questionnaire entirely voluntary and will not in any way affect my course assessments.

2. I am free to withdraw from the pre-questionnaire, post-questionnaire at any time without any disadvantage.

3. If I indicate that I may be willing to do a follow-up Interview, then I will be provided with a separate consent form for this and I do not need to proceed with the Interview if I change my mind.

4. Any personal identifying information will be destroyed at the conclusion of the project. The raw data on which the results of the project depend will be retained in secure storage for at least five years.

5. This project involves a voluntary pre-questionnaire, post-questionnaire and in-depth interview. If I indicate an interest in the optional interview, then I will be provided with further information about this, to guide my decision about whether to proceed with the interview.

6. I accept that the results of the project may be published and the Bachelor of Medical Science (Honours) Thesis will be available in the University of Otago Library (Dunedin, New Zealand). I accept that every attempt will be made to preserve my anonymity.

I agree to take part in this Research Project.

....
(Signature of participant) (Date)

.....
(Please print your name)

Appendix 3: Interview Consent Form

Research Project for BMedSci(Hons):
"Global Health Classroom – How and Why?"
In-depth Interview

I have read the Information Sheet regarding this Research Project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that: -

1. My participation in the in-depth interview is entirely voluntary and will not in any way affect my course assessments.

2. I am free to withdraw from the in-depth interview at any time without any disadvantage.

3. Participation involves being interviewed by the Researcher. The interview will last 30-60 minutes. An audio tape of the interview will be made. If I don't want to be taped, I will not be able to participate in the study.

3. Any personal identifying information will be destroyed at the conclusion of the project. The raw data on which the results of the project depend will be retained in secure storage for at least five years.

4. I accept that the results of the project may be published and the Bachelor of Medical Science (Honours) Thesis will be available in the University of Otago Library (Dunedin, New Zealand). I accept that every attempt will be made to preserve my anonymity.

I agree to take part in this Research Project.

....
(Signature of participant) (Date)

.....
(Please print your name)

Appendix 4: Post-GHCR questionnaire

1. Where are you located?

- ❍ Samoa (1)
- ❍ Christchurch, New Zealand (2)
- ❍ Dunedin, New Zealand (3)
- ❍ Nepal (4)

2. What is your current year of medical study?

- ❍ 4th (1)
- ❍ 5th (2)
- ❍ 6th (3)

The following questions are based on your global health learning in the Global Health Classroom (GHCR).

3. How interested were you in learning about global health prior to the GHCR?

- ❍ Very interested (1)
- ❍ Interested (2)
- ❍ Neutral (3)
- ❍ Uninterested (4)
- ❍ Very uninterested (5)

4. Participating in the GHCR has _____ my interest in learning about global health.

- ❍ greatly increased (1)
- ❍ increased (2)
- ❍ not changed (3)
- ❍ decreased (4)
- ❍ greatly decreased (5)

5. Please comment on your answer to the above questions. This question is optional. You may skip this question.

6. The GHCR experience enhanced my understanding of global health issues.

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

7. GHCR gave me insight into the differences between presentation and care of a common medical condition in Samoa and New Zealand.

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

8. GHCR increased my understanding about global health measures to prevent and control a common medical condition in different healthcare settings.

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

9. Please comment on your answer to the above questions. This question is optional. You may skip this question.

10. Please rate the statement "Participating in the GHCR increased my understanding of the following aspects of global health, with regards to the other country."

	Strongly agree (1)	Agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
Socioeconomic and environmental impact on health (1)	❍	❍	❍	❍	❍
b) Health system and impact on health outcomes (2)	❍	❍	❍	❍	❍
c) Cultural diversity and impact on health (3)	❍	❍	❍	❍	❍
d) Barriers to accessing healthcare (4)	❍	❍	❍	❍	❍

11. Please rate the statement "The GHCR experience increased my understanding of the importance of knowing about _____."

	Strongly agree (1)	Agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
a) how environment and health interact at a global level (1)	❍	❍	❍	❍	❍
b) the determinants of health (2)	❍	❍	❍	❍	❍
c) how culture and health interact at a global level (3)	❍	❍	❍	❍	❍

12. Please comment on your overall learning in the GHCR. What aspect of the GHCR helped you learn that?

13. Please comment on the most valuable aspects of the GHCR.

14. What aspects of the GHCR would you most want to change?

15. Please comment on your answer to the above questions. This question is optional. You may skip this question.

The following questions are based on your experience of the GHCR learning design.

16. The aims and process of the GHCR were clearly explained.

❍ Strongly agree (1)
❍ Agree (2)
❍ Neither agree nor disagree (3)
❍ Disagree (4)
❍ Strongly disagree (5)

17. How much time did you spend on the following tasks in this GHCR experience?

	< 30 mins (1)	30 - 60 minutes (2)	60 - 120 minutes (3)
Case preparation and research of guiding questions (1)	❍	❍	❍

18. The introductory and task briefing video-conferencing was a good way to start the GHCR.

❍ Strongly agree (1)
❍ Agree (2)
❍ Neither agree nor disagree (3)
❍ Disagree (4)
❍ Strongly disagree (5)

19. Would you prefer the 30-minute introductory and task-briefing GHCR session with our without video-conferencing?

❍ I would prefer the introductory and task-briefing GHCR session without video-conferencing. (1)
❍ I would prefer the introductory and task-briefing GHCR session with video-conferencing. (2)

20. Please comment on your answer to the above questions. This question is optional. You may skip this question.

21. Collaborating with my classmates was valuable to my learning in the GHCR.

❍ Strongly agree (1)
❍ Agree (2)
❍ Neither agree nor disagree (3)
❍ Disagree (4)
❍ Strongly disagree (5)

22. Collaborating with my international peers was valuable to my learning in the GHCR.

❍ Strongly agree (1)
❍ Agree (2)
❍ Neither agree nor disagree (3)
❍ Disagree (4)
❍ Strongly disagree (5)

23. I would have found it more valuable to have had a lecture on global health instead of the GHCR for my global health learning.

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

24. Would you have liked a formal lecture about the healthcare system of the other country prior or during the GHCR case studies?

- ❍ Yes (1)
- ❍ Don't know (2)
- ❍ No (3)

25. Would you have liked a formal lecture about the culture of the other country prior or during the GHCR case studies?

- ❍ Yes (1)
- ❍ Don't know (2)
- ❍ No (3)

26. How would you like to learn about global health? Please rank from 1 - 6 (1 being most desirable way to learn and 6 being most undesirable way to learn global health).

_____ Lecture (1)
_____ In-house tutorial (2)
_____ Global Health Classroom: collaborative case-based learning with medical students in another country (3)
_____ collaborative case-based learning with medical students in your own country (4)
_____ Personal reading (e.g. journal articles, books, etc.) (5)
_____ E-learning (e.g. Coursera, etc.) (6)

27. Please comment on your answer to the above questions. This question is optional. You may skip this question.

The following questions will be based on Facebook and Med Moodle.

28. Were you part of the closed Facebook "Run 1 GHCR" group?

- ❍ Yes (1)
- ❍ No (2)

Display This Question:

If Were you part of the closed Facebook "Run 1 GHCR" group? Yes Is Selected

29. Please rate the following statement "The closed Facebook "Run 1 GHCR" group _____"

	Strongly agree (1)	Agree (2)	Neither agree nor disagree (3)	Disagree (4)	Strongly disagree (5)
made the GHCR experience more collaborative (1)	❍	❍	❍	❍	❍
enhanced my informal learning (student to student learning) in the GHCR (2)	❍	❍	❍	❍	❍
helped me to get to know the overseas medical students (socialise). (3)	❍	❍	❍	❍	❍

Display This Question:

If Were you part of the closed Facebook "Run 1 GHCR" group? Yes Is Selected

30. The Facebook collaboration has increased my awareness of sensible use of social media for medical learning.

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

Display This Question:

If Were you part of the closed Facebook "Run 1 GHCR" group? Yes Is Selected

31. Please comment on your experience of the closed Facebook group in terms of the:- informal learning (student to student learning)- socialisation (getting to know each other)

Display This Question:

If Were you part of the closed Facebook "Run 1 GHCR" group? Yes Is Selected

32. The closed Facebook GHCR group was valuable to my GHCR experience.

- ❍ Agree (1)
- ❍ Disagree (2)

Display This Question:

If The closed Facebook GHCR group was valuable to my GHCR experience. Agree Is Selected

33. The closed Facebook GHCR group was valuable to my GHCR experience because: You may select multiple answers.

- ❑ I enjoyed getting to know medical students from the other school (socialize) (1)
- ❑ Sharing learning resources was convenient (2)
- ❑ It increased the sense of collegiality. (3)
- ❑ Other (4)

Display This Question:

If The closed Facebook GHCR group was valuable to my GHCR experience. Agree Is Selected

34. Please comment on your answer to the above questions. This question is optional. You may skip this question.

Display This Question:

If The closed Facebook GHCR group was valuable to my GHCR experience. Disagree Is Selected

35. The closed Facebook GHCR group was not valuable to my GHCR experience because. You may select multiple answers.

- ❑ I didn't have the time. (1)
- ❑ I didn't find it useful. (2)
- ❑ It was distracting. (3)
- ❑ The closed group activity was not stimulating. (4)
- ❑ Other (5)

Display This Question:

If The closed Facebook GHCR group was valuable to my GHCR experience. Disagree Is Selected

36. Please comment on your answer to the above questions. This question is optional. You may skip this question.

Display This Question:

If Were you part of the closed Facebook "Run 1 GHCR" group? Yes Is Selected

37. I would prefer the GHCR (case preparation and discussion via video-conferencing) with no Facebook.

- ❍ Agree (1)
- ❍ Disagree (2)

38. The GHCR MedMoodle page was easy to use for accessing the case studies.

- ❍ Strongly agree (1)
- ❍ Agree (2)
- ❍ Neither agree nor disagree (3)
- ❍ Disagree (4)
- ❍ Strongly disagree (5)

39. I reviewed the other country's case prior to the final video-conferencing.

- ❍ Yes, I did. (1)
- ❍ No, I did not. (2)

40. Please comment on your answer to the above questions. This question is optional. You may skip this question.

41. Last question Any other comments/thoughts regarding GHCR that wasn't covered in this questionnaire? This question is optional. You may skip this question.

Appendix 5: Interview Guide for GHCR

Objectives:

- Understand student perspective on global health – why, what, how?
- Understand student experience and learning in GHCR

For interview:

- Have a watch available. Note start time and end time.
- Keep to time.
- Each interview 30 mins depending on content.

Introduction

Procedure:

- Explain the Research Project, the objectives of the Interview, the interviewee's right to
    - 1) not answer a question
    - 2) terminate the interview at any stage without needing to give a reason
    - 3) request that some or all the responses be deleted permanently

- Explain the interview is being taped to avoid having to take any/many written notes while we are talking – the interview dialogue will be transcribed for analysis.
- Anonymised quotes of interviewee responses may be used in the Honour's thesis and/or academic write up for an internal Otago University document and/or an academic paper submitted for publication.
- At the end of the Interview a signed consent will be required for the interview to be utilised as outlined above – any of the above may be specifically omitted from consent at the time of signing the consent.

Welcome

- I just want to hear your opinions and there are no right or wrong answers. Just looking for your perspective.
- If you have any questions or additional comments, please go right ahead at any time, although we do have quite a lot to cover so I will try to keep things moving along.
- I will be transcribing this conversation. You are welcome to have a moment to think about each of your answers.

We are trying to understand your experience and learning in the global health classroom.

1) Can you tell me about your interest in global health?
   Prompt
   What are you interested in?
   Why are you interested?
   Do you think global health should be taught in our curriculum? Why and How?

2) Can you describe your experience of the global health classroom with Samoa/Nepal?
   Prompt
   What did you learn from it? Explore this.
   Which aspects of the GHCR helped you learn what you've told me about?

3) Tell me your views on learning with students from other countries
   Prompt
   What were the positive and negative aspects? Why?

4) Tell me your views on learning in a cross-cultural virtual setting like the Global Health Classroom
   Prompt
   What were the positive and negative aspects? Why?

5) What impact has the GHCR experience had on your perspectives?
   Prompt
   What aspects had what impacts?

6) Based on what we've talked about was your overall experience in the GHCR positive or negative?
   Prompt
   Why was it positive/negative?
   Do you have any ideas or suggestions to make future global health classrooms better?

We're near the end of our interview.

Do you have any ending comments to make? Have I missed anything you consider to be important?

Thank you very much for you time and sharing your perspective.

Appendix 6: GHCR Student Guide

Global Health Classroom

Introductory video-conferencing session: **Please refer to your timetable.**

Plenary video-conferencing session: **Please refer to your timetable.**

Student Guide

Topic: **Paediatrics/other**

Otago 5th year Paediatrics Module students AND PAHS, Nepal 5th year Medical students in rural placements

OR NUS, 4th and 5th year medical students

Choose one of the guiding questions below and please follow the instruction in brackets strictly. Each guiding question should be 1 slide, presented for 1-2 minutes. Please have the presentation ready by 20th March 3 pm.

Please use the bullet points under each key heading to guide your research and presentation – they are not set in stone, you may present on other points if they are more interesting!

Choose relevant subpoints from the guiding questions to present on, not all!

1) *Case (4-5 slides, present for 10-15 mins by nominated students who prepared the case)*
   - **Presenting complaint, History of presenting complaint, past history, social history, family history, examination findings, differential diagnosis, investigation, diagnosis and treatment, outcome**

2) *Epidemiology of your case (1 slide, present for 1-2 mins, 2 students)*
   - **National prevalence/incidence data; age gender and ethnic prevalence/incidence; risk factor prevalence/incidence; usual causes (common organism in your country); compare to global data**

3) Preventive and awareness measures related to your case (1 slide, present for 1-2 mins, 2 students)
   - **Primary prevention vaccinations (immunization schedule in your country); public health contact screening; risk factor prevention; awareness campaigns (e.g. Posters, TV ads, etc.), antibiotic resistance,**

4) *Access to care (1 slide, present for 1-2 mins, 2 students)*
   - **If somebody at home gets sick what do you do?**
   - **Delayed treatment – is it common, why? ; Inadequate treatment – is it common? Why?**
   - **Major determinants to accessing care: affordability, accessibility, health literacy, etc.**

5) *Cultural awareness (1 slide, present for 1-2 mins, 2 students)*
   - **Ethnic group diversity, languages, cultural/belief systems; sensitive topics; patient's attitudes to doctors, health seeking behaviour, use of alternative medicine and treatment, life style and substance misuse**

MedMoodle (access case history and google slides): https://medschool.otago.ac.nz/course/view.php?id=1289

Facebook (socialise and learn from each other)

- **Introduce yourself, your location; post photos of your location, hospital, etc.**
- **Ask questions (eg. "What's the best tourist destination?", "What's the public healthcare system like in Nepal?", "How does NZ's primary system work?")**
- **Share relevant resources (eg. Starship guidelines, WHO guidelines, etc.)**

Enjoy your Global Health Classroom experience!

Appendix 7: GHCR Summer Studentship Student Guide

Global Health Classroom Summer (GHCR-S)

Planned Videoconference: 14th December 3:00-4:30 pm

Case Topics: Paediatric Case

- National University of Samoa (NUS
- Invasive meningococcal disease - Otago Medical School (OMS)

Case Material is on the GHCR-S MedMoodle page

Student Questions – for the Videoconference – are posted below the Instructions. Each student or student pair only needs to work on one of these question topics.

Lead TIs will ensure progress of group and support group.

You need to:

- Choose a question and update on the "Working document" on Facebook
- Link with your collaborating student(s) at the other Medical School (NUS or OMS)
    - Introduce yourself to your linked student(s) on the Closed Facebook group (if you are not on Facebook then you should be paired with a study buddy who is a FB user)
- Prepare a 2-minute presentation (ONE PowerPoint slide +/- an illustration or diagram) regarding the case topic from your Medical School
    - NUS students answer the questions in relation to the NUS case
    - OMS students answer the questions in relation to the OMS case
    - OMS students present from a NZ health system perspective
    - NUS students from a Samoan health system perspective.
- Decide who will speak to your PowerPoint slide at the Videoconference

NUS PowerPoint Slide: https://docs.google.com/presentation/d/1p-chaIpR2SPG7y_Q4iBzHLLpFdydoV4dmZZvptFF2m4/edit?usp=sharing

OMS PowerPoint Slide: https://docs.google.com/presentation/d/1_ucwsm9KHH3NfWwJuwgW0_X97DXS-pWL8mSxpiW4XA8/edit?usp=sharing

For collaboration please:

- use the Closed **Facebook group and/or GHCR-S Med Moodle**
- **case-sensitive information can only be discussed on GHCR-S Med Moodle**

- **try to work with your linked students by sharing, in relation to your assigned questions:**
    - **your ideas, answers, data and thoughts about the questions**
    - **your draft slides**
    - **supportive comments**
    - **questions, requests for information**
- **get to know each other (learn about each other's worlds!).** You have been invited to join the closed Facebook group so enjoy the interaction.

Please contact your TIs for more information or help with questions.

Use Case History as provided in GHCR-S Med Moodle.
Questions – each question topic is allocated to a small group of linked NUS-OMS students – this will be done by your Trained Intern (TI) – if you are unsure, check with your friendly TI

Question topics

The presentation will start with the case history presented by the Lead TI and another student. The following will be presented after this.

Please choose one of the discussion points below and present the information for the other country too. For example, you may be doing epidemiology of meningococcal disease in New Zealand, so you would also present epidemiology of meningococcal disease in Samoa. This requires you to collaborate with the Samoan students to get the information and frame your presentation in the right manner. You only need to do it for one question for the presentation, but you may wish you to discuss it informally.

1) NZ/Samoa epidemiology of your case (1-2 students)
    - National prevalence/incidence data
    - Age, gender and ethnic prevalence/incidence
    - Risk factors prevalence/incidence data
        - Other co-morbidities
        - Other risk factors?
    - Usual causes (common organisms in your country)
    - Compare NZ/Samoa data with global data

2) Description of referral system to secondary, and from secondary to tertiary care (could include anonymous information from the case study from your Medical School). Provide information about, for your country (1-2 students)
    - Public/private medical system?
    - Use of Emergency Services?
    - Waiting time, triaging, etc.
    - What resources are available if people need urgent advice?

3) Preventive measures in Samoa/NZ related to the case from your country (1-2 students)

- Primary prevention vaccinations
    - List the immunization schedule in your country
- Other? Risk factor prevention.
- Secondary prevention
- Antimicrobial prescribing/adherence/resistance?
- Awareness campaigns

4) Access to care (1-2 students)
    - If somebody gets sick at home what do you do?
    - Delayed treatment – is this common, what are the key factors?
    - Inadequate treatment – how common are: non-compliance with treatment and why, e.g. costs, what about alternative/traditional treatments?
    - What are major determinants of accessing care:
        - Affordability costs in public system, private system?
        - Geography and transport?

5) Global consensus/guidelines on management of your case (1-2 students)
    - Does NZ/Samoa use standardised, national guidelines?
    - Public health responses – are public health involved in follow-up and/or contact tracing in the case from your country?
        - Why or why not?

6) What should NZ doctors know when consulting Samoan patients and vice-versa? (1-2 students)
    - Cultural/belief systems/hierarchy
    - Sensitive topics?
    - Role of family, father, mother others in decision-making and management
    - Patient's attitudes to doctors

7) Anything else that your group found interesting (e.g. something new?) (optional for group)

Think about the primary care access and management, and referral processes. Any public health issues (prevention/education/risk factor prevention/policy) for people with your case in your country and come ready to discuss and learn from each other.