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A Summary of the Health Experiences of a Global Missionary Group: 1920's to the 1970's

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2013

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Abstract

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By Kylie McCann Saunders

Background: Few data exist describing the physical and mental health risks that long-term missionaries face while serving abroad. This study describes the health experiences of a group of missionaries serving overseas between 1928-1977. Data from the 1920's to 1970's were studied in order to provide historical context of the health experiences and conditions encountered by missionaries serving overseas.

Methods: A retrospective study was conducted using secondary data from a global missionary organization. Missionaries from the 1920's to 1970's were chosen for the study due to the large collection of patient files that the organization had on record. A convenience sample of these records was taken and data were extracted from these historical medical records and then analyzed.

Results: Among the 221 missionaries examined in the study, 961 infectious disease illnesses were noted. Systemic (39%) and gastrointestinal infections (21%) were most prevalent. Records showed that 84 (38%) of the missionaries experienced mental health issues during their service abroad, including fatigue, depression, sleeplessness, nervous breakdowns, etc. Additional analysis revealed that 31 (14%) missionaries returned home on furlough for health reasons, ranging from chronic conditions to mental health problems.

Conclusion: This study shows that an array of infectious diseases and emotional strains were encountered by missionaries during their service abroad from the 1920's-1970's. Infectious disease prevention and a need to recognize and address mental health issues remain important for international missionaries. This work can help practitioners and missionary organizations re-examine their prevention materials, education efforts, and awareness related to missions and other longer-term traveler.

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Sincerely,

Kylie M. Saunders

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CHAPTER 1: INTRODUCTION

Introduction

It is estimated that 127,000 Christian missionaries from the United States traveled for overseas assignments during 2010.⁸ For these missionaries, life consists of serving others, often in challenging environments that are very different from those in their home country. Throughout the years, great tolls are taken on a missionary's health, including their physical, mental and social well-being, and many return home with chronic illnesses and emotional problems.²⁶

The global missionary organization involved is a group that currently works with partners in 136 countries worldwide, with a goal of expanding the presence of the church through mission. Missionaries serve their time by teaching the word of God via interacting with locals and via the construction of churches. In concordance with their work, it is common for missionaries to serve in rural and low resource settings.^{31,32} Due to the conditions present in these locations and the challenging nature of their work, health risks vary greatly for missionaries, compared to the risks associated with non-volunteer travelers.^{31,32}

Problem Statement

With a growing population of international missionaries spending years living abroad in challenging and demanding living situations and work environments, there is a need to explore

and research the health experiences that they encounter while in-country. Through literature reviews, it is evident that missionaries and other volunteers are subject to increased risks for infectious diseases, emotional strains, and injuries.^{19,29} However, few studies have systematically documented the health experiences encountered by missionaries over extensive periods of time. Past studies have delved into the health risks encountered by short-term travelers, but work focusing on long-term (usually > 6 months) travel is very scarce.^{10,30} More information needs to be known about the experiences that missionaries encounter during extended stays overseas, as these individuals are exposed to the conditions of low-resource and developing countries.

Purpose

International missionaries are a large population of travelers, some of whom spend years living abroad in challenging and demanding living situations and work environments. The purpose of this study is to better understand the health experiences of one specific group of missionaries serving for extended periods of time overseas between the 1920's and the 1970's, prior to the time when the jet age allowed such individuals to rapidly return home in the event of illness or other challenges.

This study aims to explore the physical and mental health experiences encountered by this group of missionaries working overseas over several decades and to provide a descriptive and comprehensive assessment of these findings.

The objectives of this project are to analyze the medical records of international missionaries from the 1920's-1970's in order to consolidate essential information on their demographics, infectious diseases encountered, and mental health experiences they faced. This information will then be used to provide an historical review of health experiences encountered by this group of missionaries.

Significance

Today, there are approximately 1.087 billion international tourist arrivals worldwide, and this is expected to grow to 1.4 billion by 2020.³⁴ The scope of international travel has changed immensely over the past years, shifting to include more developing countries. In 1950, only 15 countries, primarily European, were widely traveled to, accounting for 98% of all international tourist arrivals worldwide.¹⁷ By 2007 though, international arrivals to the same 15 countries had fallen to 57%.¹⁷ According to the World Tourism Organization, 46% of international arrivals in 2011 were to developing countries.²³ In 1935, an estimate of 11,899 Protestant missionaries were serving worldwide.²⁵ By 1972, this number had grown to 34,057 missionaries, and then to 46,381 missionaries in 2001.²⁵ The number of missionaries serving overseas has continued to grow throughout the decades, only strengthening the need to study this population further and to explore the impact that missionary work has on an individual's well-being. With more missionaries and travelers spending longer periods of time in low resource and challenging settings, disease prevention efforts are of the utmost importance in regards to reducing risk of disease and other negative health experiences.

An investigation into the experiences and health conditions faced by missionaries will provide historical context on these issues. This summary can then be used to guide further efforts to document current health experiences of missionaries serving abroad, which will help guide the re-examination and re-focusing of travel-medicine prevention material, education, and awareness for missionary groups and other long-term travelers. Ultimately, these findings could help to reduce the individual health burden of travel-related morbidities and mortalities among missionaries in this organization and possibly other similar organizations.

CHAPTER 2: LITERATURE REVIEW

Published literature on the health experiences of missionaries serving overseas for extended periods of time is limited. This literature review aims to provide a comprehensive overview of what is known about the health experiences of international missionaries. The literature review begins with a summary of short-term and long-term travel morbidity and mortality patterns. Presented next is a review of current literature on missionaries and their health experiences overseas, and the implications that come from this type of service. Within these documented experiences, infectious disease and mental illness morbidities are emphasized. Finally, current literature on prevention efforts is summarized.

Missionary Background

In 2010, it was estimated that 400,000 Christian missionaries were sent abroad to serve for the mission of the church.⁸ Over the past decades, the number of missionaries serving overseas has

grown exponentially and range of countries reached by these missionaries has almost reached the entire globe.⁸

In concordance with their mission, it is common for missionaries to serve in isolated, rural, and low resource settings.^{31,32} Due to the conditions present in these environments and the challenging nature of their work, health risks differed for these missionaries compared to non-volunteer travelers.^{26,31,32} International missionaries face an overwhelming number of obstacles and challenges while serving overseas, including poor access to health care facilities and treatment as well as harsh physical environments and conditions.¹⁹ Throughout the years, great tolls are taken on a missionary's health, including their physical, mental and social well-being, and many return home with countless illnesses and mental health problems.^{20,26} In a study done on Christian missionaries, the primary reason reported for leaving service was health related problems.¹⁹

For developing countries, environmental factors play a crucial role in mortality, morbidity and disability rates.¹¹ This burden can be attributed to crucial areas of risk; poor water quality, availability, and sanitation; vector-borne diseases; poor ambient and indoor air quality; toxic substances; and global environmental change.¹¹ For missionaries spending extended periods of time in these developing countries, health risks are increased.^{7, 31,32} In 2013, it was approximated that 22-64% of international travelers traveling to developing countries experience health problems at some point during their stay.¹² This range in occurrence depends on various factors including region of travel.¹²

Many mission agencies mandate a screening process for their missionaries prior to service, including questionnaires, in-depth interviews, health screenings, and psychological tests.³⁵ Despite these screenings, missionaries are still exposed to a variety of health risks due to their challenging work and living environments, and some even return early due to these incidences.^{3,26,35}

Short-term versus Long-Term Travel

Long-term travel is defined as travel greater than 6 months.¹⁰ While a volume of literature exists on short-term travelers related to health risks, relatively little information exists on travelers who spend longer than 2 years abroad. For the purpose of this study only, a stay of greater than two years overseas will be identified as extended stay travel.

Infectious Diseases in Missionaries

Infectious diseases are prevalent among all types of travelers.²¹ A few studies have specifically looked at travelers whose length of stay ranged from >6 months to 5 years.^{7,33} Among these longer-term travelers, there is risk for a wide range of viral, bacterial, and protozoal diseases.³³ Vector-borne diseases and contact-transmitted diseases are of primary concern in all travelers, though long-term travelers have a greater time of exposure.⁷ A study done analyzing long-term travelers/expatriates compared to non-expatriates showed that those returning from Africa had higher morbidities for malaria, filariasis, schistosomiasis, and hepatitis E.²² For those returning from the Asia-Pacific area, they had higher morbidities for strongyloidiasis, depression, and

anxiety.²² Those returning from Latin America had higher risks for mononucleosis and gastrointestinal-related infection, such as giardia. For all regions, expatriates had higher morbidities for latent TB, amebiasis, and gastrointestinal infections.²² Among missionaries specifically, viral hepatitis, malaria, and diarrhea were considered to be among the most common and serious health problems.^{19,26}

Despite this knowledge, disease prevention practices among missionaries remain inconsistent. One study found that a large percentage of international travelers at risk of contracting malaria did not take the necessary prophylactic measures before and during their travel.¹⁹ Another report suggested that only 20% of travelers were ever properly warned about malaria and that only 15% took an effective prophylactic medication.⁶

Mental Health in Missionaries

Mental health issues are also prevalent among missionaries.^{14,18,27} A study done on Christian missionaries found that both the most common illnesses and most serious conditions encountered by missionaries were of psychological origin, including depression, stress, and burnout.²⁰ High levels of mental health issues are a reflection of the major stresses experienced overseas, due to both social and work stresses.^{13,26}

The importance of psychiatric illness and the role it plays in one's experience and overall health while overseas is greatly underestimated, and more mental health prevention and education needs to be incorporated in to pre-travel preparation.^{13,18,26} Mental health conditions and adverse

emotional experiences can take a toll on one's overall health.^{15,24} According to the National Institute of Mental Health, mental and behavioral disorders, such as major depressive disorder, anxiety disorder, schizophrenia, etc, are the leading causes of disability in the United States.²⁴ In a survey of British missionaries, 60% of those returning home early, did so due to experiencing psychiatric illnesses.²⁶ This phenomenon probably reflects a lack of appropriate psychiatric facilities in many countries, as well as the relief from stress that can be achieved by repatriation.²⁶

Prevention Efforts for Missionaries

While prevention efforts may take place in some format prior to a traveler's departure, clinicians are sometimes unfamiliar with the health risks and preventative measures that should be taken for travel to low-resource settings.¹⁶ Disease prevention and health promotion for individuals traveling to low resource settings and spending long periods of time abroad can be improved upon greatly.^{2,5,19} In 1987, through a comprehensive questionnaire, American Mission board members suggested areas of prevention that should be improved upon in order to improve missionary health. These data revealed that the mission board could do more before departure, while aboard, and upon return from the field.¹⁹ The areas highlighted for pre-service included more health education; clinical diagnosis and treatment; public health and sanitation. For during service, mission board members stressed that more health assessments were needed and more frequently, and that public health education should be ongoing throughout one's service. Upon return, a comprehensive health assessment should be completed and that follow-up stool parasitology should take place. An analysis of these findings demonstrated that some mission

organizations tended to recommend measures that were either not currently taking place or had been shown to be ineffective. Other preventative measures such as increased vaccinations, greater use of malaria prophylaxis, and improved scheduling with relaxation time were not listed as top recommendations for prevention.¹⁹

Significance

International missionaries make up a large population of long-term and extended stay travelers, some spending years living abroad in challenging and demanding living situations and work environments. While literature exists on short-term and long-term travelers, few reports exist documenting the health experiences of extended stay travelers and missionaries. This study aims to explore the physical and mental health experiences encountered by a group of missionaries working overseas during several decades in the twentieth century. Ultimately, this review of missionaries from the 1920's-1970's will provide an overview and historical summary of the health experiences faced by this group of extended stay travelers overseas prior to the jet age. Once these medical records are analyzed and the frequencies of disease and illness are established, this information can be provided to travel medicine professionals and missionary organizations for its historical perspective and an educational one, to compare to more recent data and that may to help reduce health burden of travel-related morbidities and mortalities.

CHAPTER 3: MANUSCRIPT

A Summary of the Health Experiences of a Global Missionary Group: 1920's to the 1970's

Summary of Missionary Health Experiences: 1920's-1970's

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Abstract

Background: Few data exist describing the physical and mental health risks that long-term missionaries face while serving abroad. This study describes the health experiences of a group of missionaries serving overseas between 1928-1977. Data from the 1920's to 1970's were studied in order to provide historical context of the health experiences and conditions encountered by missionaries serving overseas.

Methods: A retrospective study was conducted using secondary data from a global missionary organization. Missionaries from the 1920's to 1970's were chosen for the study due to the large collection of patient files that the organization had on record. A convenience sample of these records was taken and data were extracted from these historical medical records and then analyzed.

Results: Among the 221 missionaries examined in the study, 961 infectious disease illnesses were noted. Systemic (39%) and gastrointestinal infections (21%) were most prevalent. Records showed that 84 (38%) of the missionaries experienced mental health issues during their service abroad, including fatigue, depression, sleeplessness, nervous breakdowns, etc. Additional analysis revealed that 31 (14%) missionaries returned home on furlough for health reasons, ranging from chronic conditions to mental health problems.

Conclusion: This study shows that an array of infectious diseases and emotional strains were encountered by missionaries during their service abroad from the 1920's-1970's. Infectious disease prevention and a need to recognize and address mental health issues remain important for international missionaries. This work can help practitioners and missionary organizations re-examine their prevention materials, education efforts, and awareness related to missions and other longer-term traveler.

Introduction

Approximately 127,000 Christian missionaries from the United States were sent abroad in 2010.⁸ For these missionaries, life consists of serving others, often in challenging and unfamiliar environments.^{31,32} Throughout their time overseas, a toll can be taken on a missionary's health, including their physical, mental and social well-being, and many return home with chronic illnesses and emotional problems.²⁶

This global missionary organization currently works with partners in 136 countries worldwide with a goal of expanding the presence of the church through mission. Missionaries serve their time by teaching the word of God via interacting with locals and via the construction of churches. In concordance with their mission, it is common for missionaries to serve in rural and low resource settings. Conditions in developing countries often include poor water quality, availability, and sanitation; vector-borne diseases; poor ambient and indoor air quality; toxic substances; and global environmental change.¹¹ Due to the conditions present in these locations and the challenging nature of their work, health risks vary greatly for missionaries, compared to the risks associated with non-volunteer travelers.^{31,32}

The goal of this study was to examine the health experiences of missionaries serving overseas between 1928-1977. This project is intended to provide a historical perspective of travel and tropical medicine health experiences in a group that consistently sent missionaries overseas during much of the 20th century.

Methods

Population and sample

This particular missionary organization was chosen for the study due to the large collection of historical patient files that had been transferred for storage to the organization's Atlanta office. The patients had been followed by one missionary physician with the American Mission Medical Office that was based in the U.S. over the decades of care. The missionary families included in the study were chosen through a convenience sample. Inclusion criteria consisted of having completed their service overseas between the 1920's and 1970's. Out of the 833 family records, 71 families, resulting in 221 individuals were included in the study.

Data collection and analysis

The information present in these historical medical records included self-reported data, information recorded by medical professionals, and laboratory results from routine and other medical visits. Information on the individual's history, current illnesses and diagnoses, medical procedures done, and mental health issues was collected pre, during, and after service. No forms were standardized by the American Mission Medical Office, which resulted in varying levels of depth among patient files. Furthermore, some patient files were missing from these records.

Data were extracted from historical medical records and were collected and organized in a database. Demographics (sex, age at beginning of travel, dates of travel, region of travel), medical history, vaccines taken before or after service, diseases encountered, mental health issues encountered or procedures performed, were recorded for each individual. Double data entry was completed. Infectious diseases were separated into categories based on the body systems that are primarily affected by the disease. For the analysis, the information was organized in the database to look for common health experiences encountered by missionaries. Health experiences were analyzed based on type of experience and then were analyzed further by region and decade of occurrence. Infectious disease and mental health issues were focused on. Counts and percentages were then calculated for demographics and all variables involved.

Ethical considerations

This project was granted a determination of non-research. The global missionary organization gave permission to Emory Healthcare and the Centers for Disease Control and Prevention to utilize these historic missionary files. They were to be used anonymously for research in order to better aid in the health and safety of future missionaries and other international travelers. The activity's primary intent was not to obtain generalizable knowledge, nor to use identifiable data. It was thus determined that this study did not meet the definition of research under 45 CFR 46.102(d) and that IRB was not required.

Results

Demographics and travel characteristics

Between 1928 and 1977, 221 missionaries traveled abroad to 27 different countries with this global missionary group. Missionary ages on arrival ranged from those yet unborn to those who were 36 years of age (Table 1). Almost half were born during their parent's service (43%). Assignments were in Asia (53%), Latin America (27%), and Africa (20%). The average length of time spent overseas was 11.7 years, accumulating to a total of 2578 person years spent abroad, not accounting for furloughs.

Infectious diseases

961 infectious illnesses were documented among the 221 missionaries, an average of 4.3 infectious disease incidents per individual during their time overseas. The majority of infectious diseases encountered were of systemic (involved most body systems) (39%) or gastrointestinal (21%) origin (Figure 1). The top ten infectious diseases reported among the missionaries, included measles (9%), chickenpox (9%), tonsillitis (7%), malaria (7%), influenza (5%), mumps (5%), "cold" (4%), rubella (3%), pertussis (2%), and ascariasis (2%) (Table 2). Out of these ten, five were vaccine preventable diseases; measles, chickenpox, mumps, rubella, and pertussis. There were 362 total reports of vaccine preventable disease, accounting for 38% of the total infectious diseases reported (Figure 2).

Mental health

Of the 221 missionaries, 84 (38%) experienced mental health problems while serving overseas; 154 individual mental health issues were reported, including exhaustion, depression, and sleeplessness (Table 3). Others experienced emotional strains from deaths in the family (11%). Other issues with low occurrence included schizophrenia, hypochondria, and “nervous breakdowns”. Conditions and lifestyles were strenuous and several individuals were advised to receive psychiatric help, psychotherapy, electroshock therapy, be hospitalized and/or not to return to the field.

Health-related furloughs

Furloughs were extremely common during an individual’s service. These usually consisted of a 6 week-2 year cessation from service, for varying purposes such as rest, schooling, childbirth, etc. Of note were the 31 (14%) individuals who took furloughs due to health problems (Table 4). Twenty (9%) were due to medical diagnoses or complications, ranging from chronic malaria to hepatitis to gynecological problems. Seven (3%) were due to mental health problems, ranging from one’s inability to adjust to the field to schizophrenia to mental exhaustion. Four (2%) individuals returned because of both medical and psychological issues. Additionally, three (1%) missionaries died during their service.

Conclusion

This study suggests that a large number of missionaries serving with this global missionary group suffered from infectious diseases and emotional strains during their service abroad. While

year of appointment, country and continent location all play a role in what health risks exist for an individual, there are ample health risks for long-term travelers, particularly for those off usual tourist routes.^{7,12,20} International missionaries face even more obstacles and challenges while serving overseas, including poor access to health care facilities and treatment as well as harsh conditions and environments.^{19,29}

Infectious diseases were prevalent among this group of missionaries. Literature has revealed that diarrhea is the most common illness experienced among short-term travelers.²⁶ For the missionaries in this study however, the most common diseases reported were systemic diseases (39%). Gastrointestinal diseases were also prevalent (21%). Indeed, these travelers probably did suffer from frequent gastrointestinal problems such as diarrhea, but during furlough or examination, diarrhea may have been less of an acute problem than the others recorded. While strides have been made to reduce these infections, prevention efforts still need to be stressed.

Anecdote 1: Many missionaries faced various types of infectious diseases and multiple attacks of these diseases throughout their service. Among the missionaries in the study, the individual with the most documented different types of infectious diseases was a missionary living in India. This boy arrived in-country at the age of 1 and spent the next 18 years of his life in the field, from 1951-1969. Throughout his service, he encountered many infections, with 15 different infectious diseases reported, including several fungal infections, upper respiratory infections, ringworm, sand fly fever, giardia, shigellosis, strep throat, bronchitis, pneumonia, tonsillitis, chickenpox, mumps, rubella, and ear infections.

Anecdote 2: Many of these missionaries experienced multiple attacks of malaria. An individual serving in India and Pakistan between 1934 and 1977 encountered malaria 5 different times. Despite his repeated exposure with the disease, it was not until his fifth attack in 1958 when he was finally advised to take Paludrine as a preventative. Even when antimalarials were prescribed however, missionaries still suffered from malaria. After taking Guanatol and Aralen as malaria prophylaxis, a missionary man in Liberia had malaria 6 times within the four years of his service; 1948-52. Another man serving in the Democratic Republic of the Congo from 1939-1953 suffered from numerous attacks of malaria despite his precautions. This individual was documented to have taken Aralen, Paludrine, Quinine, and Nivaquine. Due to the individual's chronic problems with malaria, he was sent home in 1953 on a health furlough with no plan to return to the DRC.

While not as prevalent as infectious diseases, mental health issues were also common occurrences among the missionaries of this global missionary group. Eighty-four (38%) of the missionaries serving overseas experienced mental health problems.

Anecdote 3: After serving only 2 years in India, a 27-year-old woman had suffered from increasingly worse and worse depression and suffered from a nervous breakdown right before the birth of her second son in 1952. Following this, she asked to have all of her memories erased from her brain, especially the bad ones, as she believed that she wouldn't be able to live anymore without this procedure. The woman was immediately hospitalized on a health furlough and received electroshock therapy as well as occupational therapy. She was then advised not to return to the field for at least 3 years.

Anecdote 4: From 1938-1962, a missionary woman in the Democratic Republic of the Congo suffered great loss and subsequently great mental strains during her service. While not only suffering from numerous infectious and chronic diseases such as malaria, various parasites, anemia, and measles, she also had to deal with the death of 3 of her children. Her oldest child died after receiving an emergency appendectomy at sea, while on the way home in 1944. In 1947, she had a miscarriage and had to get an abortion. In 1948, while pregnant with twins, she suffered from toxemia, which caused the post-natal death of one of her twins. The woman experienced countless mental health issues. She suffered from severe stress, nervousness, anxiousness, and neurotic tendencies, and in 1958, she was advised to receive mental health care and to not return to the Congo.

Additional analysis revealed that seventeen missionaries encountered political situations/strains while serving overseas and either took a furlough or returned home permanently to avoid conflict (Table 5). Two individuals were born in internment camps and were refugees in Malaysia for 5-6 years. Another individual was present during the communist invasion of Korea, and spent 4 years as a prisoner of war. While individuals not only had to deal with their current work and living environments, they furthermore had to deal with the great stresses brought on by political tensions going on in their countries of stay. These incidents most likely played a great deal in to the mental health of the missionaries, adding to the stress and anxiety that they already experienced in their everyday lives.

A study done on Christian missionaries found that both the most common illnesses and most serious conditions encountered by missionaries were of psychological origin, including depression, stress, and burnout.¹⁹ While there is little current literature in to the psychological tolls taken on missionaries serving extended periods of time overseas, it can be deduced that these issues are in fact existent and prevalent among missionaries today. Current studies done on the mental health of short-term travelers support this.^{27,28} The importance of mental illness and the role it plays on one's overall health and experience while abroad is significantly underestimated.^{14,26} These findings illustrate the need to emphasize awareness of mental health challenges and the maintenance of the well-being of missionary families and individuals abroad. Prevention and education targeting these issues needs to be incorporated in to pre-travel preparation.^{3,26} In order to negate the demanding work schedules and challenging living environments for missionaries abroad, improved scheduling with increased relaxation time should be highlighted, and debriefing sessions and periods of readjustment should be emphasized upon return home.^{19,26}

The high prevalence of health issues and stress resulted in a number of health-related furloughs for missionaries. This finding is further supported by literature reviews that revealed that the primary reason for leaving the field early was due to health-related problems, most frequently being due to Hepatitis or psychological problems.^{19,20,26}

These findings are subject to several limitations. Due to the lack of standardized forms between individuals and families, reporting bias is present within the patient files. While recommendations and guidelines were given, there was no standardized form to be completed by

health professionals. Many inconsistencies are present among how doctors in the field, other health providers, or patients reported their illnesses or history. Individuals' records varied greatly in the amount of information present in their files, with regards to both the number of file pages and level of detail present. These discrepancies resulted in missing and conflicting data.

Additionally, the information collected was dependent on if the individual came in to the clinic and sought out medical advice or treatment. Therefore, it is probable that there is a significant underreporting of disease. The data's validity were further dependent on the doctor's ability to correctly diagnosis and report the disease in the patients' files. Especially in low resource countries and during the decades examined, resources and diagnostic tools were not always available, and this could have affected a physician's ability to correctly diagnosis a patient. This is probably true of sexually transmitted diseases.

This study holds significance for travel health maintenance. These findings provide historical context in to the health experiences and conditions encountered by missionaries spending long periods of time overseas between 1928 and 1977. Information from these data can be used to guide further research into the current health experiences of missionaries serving abroad. A comparison of this study to that of missionaries in the twentieth century could provide valuable insight in to how and why disease trends have changed over time. Future research will also help to guide the re-examination and re-focusing of travel-medicine prevention material, education, and awareness for missionary groups and other long-term travelers. Ultimately, these findings could help to reduce the individual health burden of travel-related morbidities and mortalities among missionaries in this organization and possibly other similar organizations.

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Tables and Figures

Table 1: Demographic data for missionaries serving abroad, 1928- 1977

N=221

	N (%)
<i>Sex</i>	
Male	124 (56)
Female	97 (44)
<i>Age</i>	
Unborn	96 (43)
0-5 years	36 (16)
6-10 years	15 (7)
11-20 years	2 (1)
21-30 years	63 (29)
31-40 years	9 (4)
<i>Region of Travel</i>	
Asia	118 (53)
Latin America	59 (27)
Africa	44 (20)
<i>Duration of Stay</i>	
2 years or less	33 (15)
3-5 years	42 (19)
6-10 years	41 (19)
11-15 years	41 (19)
16-20 years	30 (13)
21-25 years	19 (9)
26-30 years	5 (2)
31-35 years	5 (2)
36-40 years	2 (1)
41-45 years	2 (1)
46-50 years	0 (0)
51-55 years	1 (0)

Table 2: Number of reported illnesses by region among missionaries serving abroad, 1928- 1977

Disease Reported	Africa	Asia	Latin America	Totals
Measles	15	46	27	88
Chickenpox	19	38	29	86
Tonsillitis	16	43	12	71
Malaria	26	37	3	66
Influenza	11	23	12	46
Mumps	8	24	14	46
Cold	5	24	12	41
Rubella	4	17	9	30
Whooping Cough	5	12	4	21
Ascariasis	7	8	5	20

Table 3: Number of reported mental health issues among missionaries serving abroad, 1928-1977

N=221	
Mental Health Issue Reported	Counts
Death of family member	28
Fatigue, emotional and/or nervous	19
Anxiety	18
Depression	14
Tensions, emotional and/or nervous	9
Irritable	9
Sleeplessness	9
Severe stress	7
Insecure	6
Maladjustment to field	5
Insomnia	4
Withdrawn	4
Nervous breakdown	4
Slow mental development	4
Bed-wetting at older age	3
Emotional instability	3
Loss of weight- due to stress	2
Violent	1
Hypochondria	1
Lonely	1
Feelings of numbness	1
Emotional conflicts	1
Body image issues	1
Total counts of mental health issues	154

Table 4: Details of missionaries returning home due to health-related furloughs while serving abroad, 1928- 1977

Year of furlough	Age upon return & Sex	Country of service	Health reason	Outcome
1940	36 M	China, Korea	Pleurisy and Tubercular Infection	Returned
1949	32 F	DRC	Migraines from menstrual irregularities	Returned
1950	32 F	Indonesia	Psych issues- maladjustment to field	No return
1950	30 M	Indonesia	Psych issues- maladjustment to field	No return
1950	6 M	Indonesia	Deterioration of child's health	No return
1950	3 F	Indonesia	Deterioration of child's health	No return
1950	30 F	Korea	Ulcerative Colitis & emotional issues	No return
1950	25 M	India	Medical and psychological issues	No return
1951	33 F	Pakistan, India	Psychological issues	No return
1951	22 M	Japan	Misdiagnosed with TB	Returned
1952	34 M	Japan, China	Psychological strains- work and Hepatitis	Transfer
1952	27 F	India	Mental health- was hospitalized	No return
1953	36 M	DRC	Chronic Malaria	No return
1953	31 M	Korea	Vitamin deficiencies- Prisoner of War	No return
1953	37 F	Malaysia	Gynecological problems	No return
1953	31 F	India	Rheumatoid Arthritis and schizophrenic	No return
1954	28 M	Chile	Mental health	No return
1956	13 F	Japan	Thyroid problems	Returned
1956	25 F	Malaysia	Emotional instability	Returned
1957	33 M	Bolivia	Cardiac problems	Returned
1957	31 M	Chile	Eye troubles that required surgery	Returned
1957	1 M	India	Celiac Disease	No return
1958	42 M	Brazil	Iritis- hospitalized	Returned
1959	49 M	India, Pakistan	Headaches- physical and nervous fatigue	Returned
1960	46 M	India	Multiple health issues	No return
1960	45 F	India	Multiple severe health issues	No return
1960	16 F	Mozambique	Treatment for weight	Returned
1967	27 M	Puerto Rico	Accidental death	Death
1968	50 F	India, Pakistan	Multiple gynecological problems	Returned
1968	25 M	Brazil	Killed in Vietnam war	Death
1969	57 M	Malaysia, China	Died of Leprosy	Death
1969	36 F	Nigeria	Mental issues and exhaustion	Returned
1972	54 F	India, Pakistan	Headaches-physical and nervous fatigue	Returned

1973 21 M Mexico Health rating was a Class D No return

Table 5: Political issues encountered by missionaries serving abroad, 1928- 1977

Year of Event	Age at event & Sex	Country of service	Political Issue(s) Encountered	Outcome
1932	27 m	India	Trouble with government	Returned home
1932	25 f	India	Trouble with government	Returned home
1932	4 m	India	Trouble with government	Returned home
1940	-	China	Political situation	-
1940	-	China	Political situation	-
1940	-	China	Political situation	-
1940	-	China	Political situation	-
1950	30 f	Korea	Communist invasion of Korea	Returned home
1939-45	3 months m	Malaysia	War refugee- in internment camp	Furlough
1939-47	29 m	China	War	Furlough
1940-45	unborn f	Malaysia	War refugee- in internment camp	Furlough
1946-51	39 m	Japan	War in Japan	Furlough
1946-52	32 m	India	War	Furlough
1946-52	31 f	India	War	Furlough
1946-52	4 m	India	War	Furlough
1946-52	1 m	India	War	Furlough
1949-53	27 m	Korea	Was in a Communist Prisoner Camp	Returned home
1950-51	38 m	China	Political situation	Furlough
1952-53	34 m	China	Great strain	Furlough
-	-	China	War	Little exercise
-	-	Indonesia	Political situation	-
-	-	Indonesia	Political situation	-
-	-	Indonesia	Political situation	-
-	-	Indonesia	Political situation	-
-	-	Indonesia	Political situation	-

Figure 1: Number of reported infectious diseases by body system affected among missionaries serving abroad, 1940's- 1960's

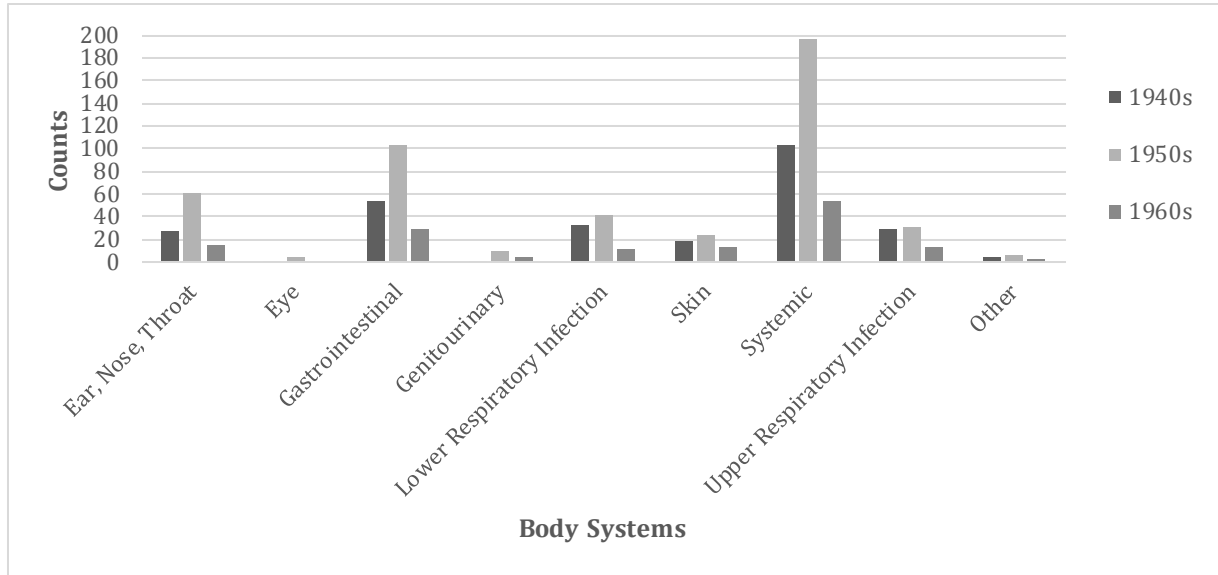
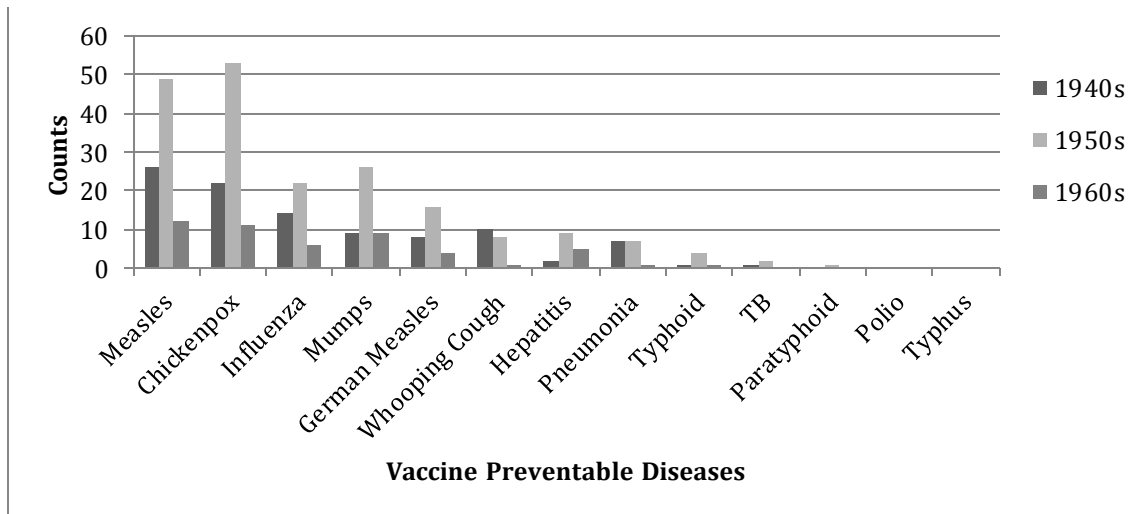


Figure 2: Number of reported vaccine preventable diseases among missionaries serving abroad, 1940's- 1960's



CHAPTER 4: CONCLUSION AND RECOMMENDATIONS

Summary of Findings

The results presented show that missionaries serving with a global organization suffered significantly from both infectious diseases and mental health issues during their service abroad. While year of appointment, country and continent location all play a role in what health risks exist for an individual, it can be said that there were and still are substantial health risks for long-term travelers, particularly for those off usual tourist routes.^{7,9,20} International missionaries face even more obstacles and challenges while serving overseas, including poor access to health care facilities and treatment as well as harsh conditions and environments.^{19,29} The 1920's-1970's reflects an era where transportation to foreign countries required long, difficult journeys by ship to one's destination. If they were in need of medical assistance and needed to be evacuated back home, it was a long journey (often months) that proved difficult. On one account, a missionary was evacuated via ship back to the United States for an appendectomy. Due to the long nature of the trip, an emergency surgery was performed on the ship and the individual died.

Infectious diseases

Infectious diseases were highly prevalent among the missionaries (Table 2, Figure 1). Literature has revealed that diarrhea is the most common illness experienced among short-term travelers.²⁶ Among the individuals in this study however, systemic diseases were most prevalent (39%).

These included diseases such as measles, chickenpox, malaria, mumps, scarlet fever, etc. Gastrointestinal diseases, such as giardia and shigellosis were also prevalent (21%). Diseases with low prevalence included counts of scarlet fever, typhus, typhoid, and scabies. There were 362 total reports of vaccine preventable disease, accounting for 38% of the total infectious diseases reported (Figure 2). These results highlight the impact that vaccines have played over the past 50 years in improving overall health.^{1,4} While strides have been made to reduce the prevalence of infectious diseases worldwide, via vaccinations, clean water, medical innovations, etc, there is still a great need to stress prevention efforts prior to international travel.¹ Research should be done to investigate the shifts in infectious disease prevalence among the countries traveled to by missionaries and long-term travelers.

Anecdote 1: Many missionaries faced various types of infectious diseases and multiple attacks of these diseases throughout their service. Among the missionaries in the study, the individual with the most documented different types of infectious diseases was a missionary living in India. This boy arrived in-country at the age of 1 and spent the next 18 years of his life in the field, from 1951-1969. Throughout his service, he encountered many infections, with 15 different infectious diseases reported, including several fungal infections, upper respiratory infections, ringworm, sand fly fever, giardia, shigellosis, strep throat, bronchitis, pneumonia, tonsillitis, chickenpox, mumps, rubella, and ear infections.

Anecdote 2: Many of these missionaries experienced multiple attacks of malaria. An individual serving in India and Pakistan between 1934 and 1977 encountered malaria 5 different times. Despite his repeated exposure with the disease, it was not until his fifth attack in 1958 when he

was finally advised to take Paludrine as a preventative. Even when antimalarials were prescribed however, missionaries still suffered from malaria. After taking Guanatol and Aralen as malaria prophylaxis, a missionary man in Liberia had malaria 6 times within the four years of his service; 1948-52. Another man serving in the Democratic Republic of the Congo from 1939-1953 suffered from numerous attacks of malaria despite his precautions. This individual was documented to have taken Aralen, Paludrine, Quinine, and Nivaquine. Due to the individual's chronic problems with malaria, he was sent home in 1953 on a health furlough with no plan to return to the DRC.

Mental health

Mental health issues were also very prevalent among the global missionary group (Table 3). Eighty-four (38%) of the missionaries serving overseas experienced mental health problems, the majority being fatigue, depression, anxiety and sleeplessness. Other issues included “insecurities”, severe stress, feelings of numbness, body image issues, and several accounts of a diagnosed “nervous breakdown”. Additionally, there were 28 individuals that had a death of a family member while serving abroad. A study done on Christian missionaries found that both the most common illnesses and most serious conditions encountered by missionaries were of psychological origin, including depression, stress, and burnout.¹⁹ While there is little current literature in to the psychological tolls taken on missionaries serving extended periods of time overseas, it can be deduced that these issues are in fact existent and prevalent among missionaries today. Current studies done on the mental health of short-term travelers support this.^{27,28} These findings illustrate the need to emphasize awareness of mental health challenges

and the maintenance of the well-being of missionary families and individuals abroad. In order to negate the demanding work schedules and challenging living environments for missionaries abroad, improved scheduling with increased relaxation time should be highlighted, and debriefing sessions and periods of readjustment should be emphasized upon return home.^{19,26}

Anecdote 3: After serving only 2 years in India, a 27-year-old woman had suffered from increasingly worse and worse depression and suffered from a nervous breakdown right before the birth of her second son in 1952. Following this, she asked to have all of her memories erased from her brain, especially the bad ones, as she believed that she wouldn't be able to live anymore without this procedure. The woman was immediately hospitalized on a health furlough and received electroshock therapy as well as occupational therapy. She was then advised not to return to the field for at least 3 years.

Anecdote 4: From 1938-1962, a missionary woman in the Democratic Republic of the Congo suffered great loss and subsequently great mental strains during her service. While not only suffering from numerous infectious and chronic diseases such as malaria, various parasites, anemia, and measles, she also had to deal with the death of 3 of her children. Her oldest child died after receiving an emergency appendectomy at sea, while on the way home in 1944. In 1947, she had a miscarriage and had to get an abortion. In 1948, while pregnant with twins, she suffered from toxemia, which caused the post-natal death of one of her twins. The woman experienced countless mental health issues. She suffered from severe stress, nervousness, anxiousness, and neurotic tendencies, and in 1958, she was advised to receive and to not return to the Congo.

Health-related furloughs

Furloughs were extremely common during an individual's service (Table 4). These usually consisted of a 6 week-2 year cessation from service, for varying purposes such as rest, schooling, childbirth, etc. Thirty-three (14%) missionaries took health-related furloughs while abroad (Table 4). Twenty (9%) were due to medical diagnoses or complications, ranging from chronic malaria to hepatitis to gynecological problems. Seven (3%) were due to mental health problems, ranging from one's inability to adjust to the field to schizophrenia to mental exhaustion. Four (1.8%) individuals returned because of both medical and psychological issues. Additionally, three (1%) missionaries died during their service; one accidental, one during military duty, and one due to complications from leprosy. Among these health-related furloughs, 20 individuals did not return back to the field, including those that died. The remaining missionaries returned back to the field after receiving adequate healthcare or rest and relaxation. While the reasons for return varied among these individuals, these health-related furloughs further support how the harsh physical environments and conditions in the field can take a toll and can cause serious strains on the lives of these missionaries.

Additional findings

There were several interesting findings that arose during this study. Seventeen missionaries encountered political situations/strains while serving overseas and either took a furlough or returned home permanently to avoid conflict (Table 5). Two individuals were born in internment camps and were refugees in Malaysia for 5-6 years. Another individual was present during the

communist invasion of Korea, and spent 4 years as a prisoner of war. The 1940s-1960s served as times of conflict for several countries that missionaries worked in. Wars and political strife occurring in China, Japan, India, Malaysia, Korea, and Indonesia propagated great strain for missionaries serving in those countries. While individuals not only had to deal with their current work and living environments, they furthermore had to deal with the great stresses brought on by political tensions. These incidents probably played a great deal in to the mental health of the missionaries, adding to the stress and anxiety that they already experienced in their everyday lives.

Anecdote 5: From 1949-1953, a missionary man, at the age of 27, spent 4 years of his life as a prisoner of war in a Communist Prison Camp in North Korea. While not much was documented throughout his stay in the camp, it was noted that his general conditions were surprisingly good despite the primitive living conditions in the camp. His emotional stability and state of mind was also said to be quite satisfactory, especially considering the situation that he had been in. Despite the lack of information, several documented illnesses of parasitic infections, some kidney irritation, broken ribs and a sprained foot and ankle were recorded. Upon release, the most serious health issues faced were due to severe vitamin deficiencies and possible beriberi.

Anecdote 6: While information is not present on the parents of this missionary family, two children were documented to have been war refugees from Indo-China, living in an internment camp in the Philippine islands from 1940-1945. The son was only 1 year old when his family was forced to hide in the hills for a year after Japanese occupation. It was after this that the family was taken to an internment camp with very poor conditions. Shortly thereafter, a native

midwife in the camp delivered the daughter. For years, the family was forced to survive on a limited diet and then spent their last months in the camp on a starvation diet. Both children consequently suffered from anemia and other vitamin deficiencies. Many different parasitic infections were encountered such as hookworm, ascariasis, and shigellosis, as well as vaccine preventable diseases such as mumps, whooping cough, and measles. However, despite these experiences, both children went on to serve as missionaries for 22 additional years after this ordeal.

Also of note was that among the 28 females that served during their child-bearing years, 25 (89%) of them gave birth during their service. Number of childbirths for mothers ranged from one to six. Fourteen (50%) of these women had obstetric or gynecological issues during their pregnancies or childbirths, and 9 (32%) women had children that died due to a miscarriage or neonatal-related death. Not only did these incidences take great tolls on the women's bodies, but they also created emotional strains and instabilities on several accounts.

Implications and Recommendations

This study holds significance for travel health maintenance. The investigation of health experiences of missionaries living overseas for extended periods of time revealed that long-term travelers were exposed to an array of health risks while working abroad. While recent data on long-term travelers is scarce, literature on short-term travel has indicated that health issues still face those working and serving abroad.^{3,7} The profile of these illnesses has changed with medical innovations, such as vaccines, but nonetheless, health issues remain a difficult and prevalent

problem.¹ The high prevalence of health issues and stress resulted in a significant number of health-related furloughs (14%). This finding is further supported by literature reviews that revealed that the primary reason for leaving the field early was due to health-related problems, most frequently being due to hepatitis or psychological problems.¹⁹ While the introduction of the hepatitis A vaccine has decreased the chances of early return for many missionaries, psychological problems and adjustment issues remain a serious concern. These results demonstrate the demand to re-examine and re-focus travel-medicine prevention material, education, and awareness.

An extensive analysis of this scope is not present in the literature. Data exist regarding short-term international travelers, but little has been done to investigate the impact that length of stay has to play on travelers abroad. There is a clear need to explore this area further as more and more individuals from the United States are traveling abroad for missionary work, job opportunities, or long-term leisure travel. While it is evident that living and working in these rural and low-middle resource countries presents a certain risk of infectious disease, further research needs to look at the impact of length of time spent abroad and mental health issues encountered. It is a widely under-researched and under-stressed topic that needs to be emphasized.^{3,26} These findings can help benefit travel health providers and mission groups by providing insight into the health experiences encountered by missionaries spending long periods of time overseas. As indicated by the results from this study and others, mental health issues can be severe and damaging to one's overall well-being. Prevention and education targeting these issues therefore needs to be incorporated in to pre-travel preparation and during service, more furloughs or periods of rest

and relaxation should be encouraged, as to allow the individual to unwind from stressful work environments and living conditions.

Factors such as the introduction of vaccines, drugs and preventative medicine campaigns could have had significant impacts on infectious disease prevalence rates overseas. Primarily, this study's results could help guide future studies on the health experiences of current missionaries working abroad. A comparison of this study to that of missionaries in the twentieth century could then provide valuable insight in to how and why disease trends have changed over time.

Ultimately, this would help provide insight to medical professionals and missionaries as to what to focus on for pre, during, and post travel prevention procedures.

The quantity of patient files available through this global missionary group is ample and further analysis is needed to explain some of the findings and to study ways of preventing country-specific diseases. Research could investigate further into the relationships between the demographics and the health experiences faced, the vaccines and other prevention methods that missionaries received, and the non-communicable diseases and physical experiences that were encountered. This would help narrow down the scope of the data and allow the researcher to determine specific factors that could have played in to the changing health experiences over the decades.