

**YANGON UNIVERSITY OF ECONOMICS
MASTER OF DEVELOPMENT STUDIES PROGRAMME**

**A STUDY ON KNOWLEDGE, ATTITUDE AND PRACTICE OF
PEOPLE ON COVID-19 VACCINATION IN RURAL AREA
(CASE STUDY: PHAUNGGYI VILLAGE, HLEGU)**

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(CASE STUDY: PHAUNGGYI VILLAGE, HLEGU)**

A thesis submitted as a partial fulfillment towards the requirements for
the Degree of Master of Development Studies

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This is to certify that the thesis entitled “**A Study on Knowledge, Attitude and Practice of People on COVID-19 Vaccination in Rural Area (Case Study: Phaunggyi Village, Hlegu)**” submitted as partial fulfillment towards the requirements for the degree of Master of Development Studies has been accepted by the Board of Examiners.

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ABSTRACT

This study aimed to assess the knowledge, attitude and practice of covid-19 vaccination among people of Phaunggyi sanpya village regarding their livelihood, using structured questionnaires. Regarding knowledge about covid-19 vaccination, most respondents had limited knowledge about the facts included in the questionnaire related to covid-19 vaccination and the differences between the levels of knowledge between the respondents were not so vast. Most respondents had medium level of knowledge when levels of scores for knowledge were graded. Regarding attitude towards covid-19 vaccination, most respondents had positive general attitude and they did also have positive attitude towards covid-19 vaccination regarding their livelihood. Regarding practice of covid-19 vaccination, most respondents had good practice though most of them did not remember which type of covid-19 vaccine had been administered to them. According to the survey results, income level was not directly proportional to the knowledge level about covid-19 vaccination, lower income level was associated with negative attitude towards covid-19 vaccination and high income level was positively correlated with the good practice of covid-19 vaccination. According to the survey results, non-farm works were more associated with high level of knowledge about covid-19 vaccination while farm works were more associated with medium level of knowledge. There was no statistically significant association between types of the livelihoods and the attitude and practice of covid-19 vaccination.

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LIST OF ABBREVIATIONS

CFR	- Case fatality rate
COVID-19	- Corona Viral disease 2019
EPI	- Expanded Program on Immunization
FOC	- free of charge
Gavi	- Global alliance for vaccine and immunization
GDP	- Gross domestic product
KAP	- Knowledge, Attitude and Practice
SARS-CoV2	- Severe Acute Respiratory Syndrome Corona virus type 2
ST.dev	- Standard deviation
UNDP	- United Nations Development Programme
WHO	- World Health Organization
2019nCov	- 2019 novel corona virus

CHAPTER I

INTRODUCTION

1.1 Rationale of the Study

The Covid-19 pandemic has had profound global impacts, particularly on public health, economies, and daily life. Vaccination has emerged as one of the most effective tools in mitigating the spread of the virus and protecting populations from severe illness and death. However, despite widespread efforts to distribute vaccines, rural areas often face significant challenges related to vaccine awareness, accessibility, and uptake. Understanding the level of awareness regarding Covid-19 vaccines in rural areas is crucial for enhancing vaccination campaigns and improving overall public health outcomes.

Rural areas tend to have lower access to healthcare services, less exposure to public health information, and limited infrastructure compared to urban centers. This can result in lower awareness of the benefits of vaccination, greater susceptibility to misinformation, and more pronounced vaccine hesitancy. A lack of awareness about the importance of Covid-19 vaccination can hinder human development in these areas, as the pandemic continues to disrupt education, employment, and healthcare systems.

Human development, particularly in rural regions, relies heavily on good health, access to information, and the ability to participate in the economy. The Covid-19 pandemic has highlighted and exacerbated existing inequalities, particularly in healthcare access and health literacy. Vaccination is essential not only to protect individuals from the virus but also to promote broader societal recovery by enabling people to return to work, children to return to school, and economies to function more effectively.

Good health is a fundamental element of human development. The pandemic has overwhelmed health systems and negatively impacted other health services, such as maternal care, child immunizations, and the management of chronic diseases. Ensuring that rural populations are well-informed about the Covid-19 vaccine is critical for preventing further disruptions to health services and ensuring that rural residents can lead healthy, productive lives.

Education and awareness are essential components of human development. By understanding the level of awareness about the Covid-19 vaccine, this study aims to identify gaps in knowledge and the spread of misinformation in rural communities. Addressing these gaps is necessary to ensure that rural populations make informed health decisions, particularly with regard to accepting vaccines that can protect them from the virus. Increased vaccine awareness will empower individuals to protect their families and communities, promoting better health outcomes and resilience against future health crises.

The pandemic has had a profound economic impact, particularly on rural economies that are often dependent on agriculture, informal labor, and small-scale enterprises. High levels of vaccine awareness and uptake are crucial for reducing the spread of the virus, enabling people to safely return to work, and revitalizing rural economies. Without adequate awareness and understanding of the Covid-19 vaccine, rural populations may continue to experience prolonged economic disruption, which in turn hinders overall human development in these areas.

In Myanmar, Yangon is the region where the burden of covid-19 pandemic affected most. Among the towns and villages of Yangon region, Phaunggyi village, one of the largest villages was selected for this study as this village was relatively a remote area, away from the urban hub of the Yangon and it had the largest covid-19 treatment center in Yangon before the chaotic political situations arose during the covid-19 pandemic. By conducting this study, it could contribute valuable insights into the awareness levels and attitudes toward Covid-19 vaccines in rural areas, providing a foundation for targeted interventions and education campaigns. This is crucial not only for addressing the current pandemic but also for building a more resilient and informed population, ultimately contributing to the sustainable development of rural communities.

1.2 Objectives of the Study

The main objective of this study is to analyze the level of knowledge, attitude and practice on covid-19 vaccination, of the people living in Phaunggyi village regarding on their livelihood.

1.3 Method of Study

This study is descriptive research applying quantitative approach. Both primary and secondary data are utilized. The primary data were collected by means of questionnaires and the samples were selected by using simple random sampling method. Three points Likert scale was mainly used, in the questionnaire, to assess the KAP of the people regarding covid-19 vaccination. The obtained data were analyzed with statistical tools. Moreover, the questionnaire included demographic and livelihood information of the respondent. The secondary data were obtained from the journals and report from Ministry of Health, WHO and the related websites.

1.4 Scope and Limitations of the Study

This study aimed to study the level of knowledge, attitude and practices on Covid-19 vaccination of people in Phaunggyi village with respect to their livelihood condition. This survey was conducted from May 2024 to August 2024. It just represents a small population of Phaunggyi village of Yangon region though the findings are interesting and applicable to some extents.

1.5 Organization of the Study

This study was organized in five chapters. Chapter I was introduction and described the rationale of the study, objectives, method of the study as well as the scope and limitation of the study. Chapter II presented literature review. Chapter III described the overview of covid-19 pandemic situation in Myanmar. Chapter IV described the survey results in detail and Chapter V described the conclusion of the findings of the study.

CHAPTER II

LITERATURE REVIEW

2.1 Vaccine Awareness and Its Importance

Vaccine awareness refers to the public's knowledge, understanding, and perceptions about vaccines, including their benefits, safety, and role in preventing disease. It is a critical component of public health efforts, especially in the context of infectious disease control and pandemic response. Awareness is not just about knowing that vaccines exist, but also about understanding their importance in providing immunity, reducing transmission, and ultimately achieving herd immunity within populations.

The importance of vaccine awareness becomes especially pronounced during pandemics, such as Covid-19, where the rapid spread of a virus can overwhelm healthcare systems and lead to significant loss of life. In such contexts, high levels of vaccine awareness are essential for promoting vaccine uptake, combating misinformation, and addressing vaccine hesitancy. Awareness campaigns can help dispel myths and misconceptions about vaccines, build public trust, and ensure that people understand both the personal and collective benefits of vaccination.

By improving vaccine awareness, public health authorities can encourage greater acceptance of vaccines, which is crucial for achieving high immunization coverage and controlling the spread of infectious diseases. This, in turn, helps reduce the burden on healthcare systems, protects vulnerable populations, and facilitates a return to normalcy in affected communities (World Health Organization, 2020).

Public health campaigns have historically played a pivotal role in raising awareness about vaccines and their benefits, particularly during health crises and pandemics (Schwartz & Caplan, 2011). For instance, during the H1N1 influenza pandemic in 2009, public health campaigns were launched globally to educate populations about the importance of vaccination in preventing the spread of the virus. Studies show that these campaigns significantly increased vaccine uptake, particularly in regions where misinformation or lack of understanding about the vaccine's benefits initially led to hesitancy.

Similarly, global efforts to eliminate diseases like measles have relied heavily on public health campaigns aimed at increasing vaccine awareness (Mesch &

Schwirian, 2015). Measles is highly contagious, and vaccination is critical to preventing outbreaks. Public awareness campaigns, particularly in regions with historically low vaccination rates, have helped reduce the incidence of measles by educating communities about the importance of immunization and dispelling common myths about vaccine safety.

In the context of the Covid-19 pandemic, public health campaigns have been instrumental in educating people about the safety and efficacy of the newly developed vaccines. Through media campaigns, community outreach, and the involvement of trusted health professionals, these efforts have sought to address common concerns and hesitations regarding Covid-19 vaccines. Studies have shown that clear and consistent messaging, especially when delivered by trusted local figures, can greatly increase vaccine acceptance in both urban and rural areas.

The level of awareness about vaccines directly influences vaccine acceptance and hesitancy (Dror et al., 2020). Higher awareness and understanding are typically associated with greater vaccine acceptance, as people are more likely to recognize the personal and societal benefits of immunization. Conversely, a lack of awareness or exposure to misinformation can lead to vaccine hesitancy, where individuals delay or refuse vaccination despite its availability.

For example, during the Covid-19 pandemic, global studies revealed that people who were better informed about the safety, efficacy, and benefits of vaccines were more likely to accept vaccination. In contrast, individuals with limited access to accurate information, particularly in rural and underserved areas, showed higher levels of vaccine hesitancy. Misinformation and myths about the side effects of vaccines or conspiracy theories about vaccine ingredients have been identified as major contributors to hesitancy, particularly in communities with lower health literacy.

Vaccine awareness initiatives that focus on addressing these concerns and providing factual, accessible information have been shown to reduce hesitancy and improve vaccination rates (Larson et al., 2015). For instance, local campaigns in regions with high hesitancy have successfully increased acceptance by engaging with community leaders, utilizing local media, and providing transparent information on vaccine development and safety. These efforts are crucial in ensuring that more people get vaccinated, which ultimately contributes to public health goals of controlling disease spread and protecting vulnerable populations.

2.1.1 Overview of the Covid-19 Pandemic

The Covid-19 pandemic, caused by the SARS-CoV-2 virus, has been one of the most disruptive global crises in modern history. Since its emergence in late 2019, the virus has spread rapidly across continents, leading to widespread illness, significant loss of life, and unprecedented changes to daily life. Its impact on public health, economies, and social structures has been profound, with ripple effects continuing to be felt in almost every aspect of society.

The most immediate and severe consequences of the pandemic were seen in public health systems around the world. Healthcare infrastructures were overwhelmed as hospitals and medical facilities struggled to manage the surge in Covid-19 cases. Many countries experienced shortages of medical supplies, including ventilators, personal protective equipment (PPE), and testing kits, which exacerbated the crisis. Healthcare workers were placed under extreme pressure, leading to burnout and, in many cases, high infection rates among medical professionals. Additionally, routine healthcare services, such as vaccinations, maternal care, and treatment for chronic illnesses, were disrupted, further worsening the overall health outcomes of populations, especially in low-income and rural areas.

The pandemic also accelerated scientific advancements, particularly in vaccine development, with the rapid production and approval of several Covid-19 vaccines. However, disparities in vaccine distribution highlighted global inequities, as many low- and middle-income countries faced significant delays in obtaining vaccines, contributing to prolonged outbreaks and the emergence of new variants.

2.2 Challenges in Rural Health Systems and Vaccine Distribution

Rural areas around the world face significant limitations in healthcare infrastructure, which affects the delivery of essential services, including vaccination programs. A primary challenge is the scarcity of healthcare facilities in rural regions, with hospitals and clinics often located far from communities. The long travel distances required to access healthcare, coupled with inadequate transportation infrastructure, can prevent rural residents from seeking timely medical care, including vaccinations. In addition, rural areas tend to have a shortage of healthcare workers, leading to overburdened staff and reduced capacity to conduct vaccination drives. These limitations hinder the ability of rural health systems to offer adequate care and

comprehensive vaccine services, which is particularly problematic during health crises such as pandemics (World Health Organization, 2019).

Workforce shortages further exacerbate the situation. Rural healthcare systems often struggle to recruit and retain qualified medical professionals due to factors such as lower salaries, limited career advancement opportunities, and isolation from larger urban centers. As a result, there are fewer healthcare professionals available to educate the public about vaccines, administer vaccinations, or monitor side effects, contributing to lower vaccination rates in these areas (Ricketts, 2000).

2.2.1 Disparities in Vaccine Distribution Between Urban and Rural Areas

The disparity in vaccine distribution between urban and rural areas is a critical issue that became even more evident during the Covid-19 pandemic. Urban centers typically have better access to healthcare facilities, including hospitals and vaccination centers, which allows for faster and more efficient vaccine rollouts. By contrast, rural areas often face logistical challenges such as inadequate cold chain storage facilities for vaccines, especially those requiring special handling like mRNA vaccines. The lack of infrastructure to properly store and distribute vaccines in rural areas leads to delays in vaccine delivery and limits rural populations' access to vaccinations (Murthy et al., 2021).

Moreover, supply chain constraints in rural areas can result in a slower and more irregular distribution of vaccines. In some cases, rural areas are deprioritized in vaccine distribution plans, as urban centers are seen as higher-risk areas due to higher population densities. This discrepancy in access creates significant disparities in vaccination rates, which contributes to uneven public health outcomes between rural and urban populations (Fraser et al., 2015).

2.2.2 Role of Health Communication in Rural Communities

Health communication and education campaigns play a vital role in raising awareness about vaccines, particularly in rural communities where misinformation and vaccine hesitancy are often prevalent. However, the effectiveness of these campaigns can be limited in rural areas due to lower levels of health literacy and reduced access to reliable health information. Rural populations may have limited exposure to media and health campaigns that promote the importance of vaccination,

and they may rely on informal communication networks where misinformation can spread more easily (Gollust, Lantz, & Ubel, 2009).

Furthermore, rural communities may have cultural beliefs or mistrust of the healthcare system that further complicates the delivery of health messages. Tailored communication strategies that consider local context, languages, and cultural values are necessary to overcome these barriers. Community health workers and local leaders can play a key role in disseminating accurate vaccine information and addressing concerns about vaccine safety and efficacy. In some cases, trusted local figures, such as religious or traditional leaders, can influence public attitudes and increase vaccine uptake in rural areas (Henderson et al., 2018).

2.2.3 Barriers to Vaccine Awareness in Rural Areas

(a) Socioeconomic Barriers

Socioeconomic factors, such as poverty, lack of education, and low literacy rates, are significant barriers to vaccine awareness in rural areas. Poverty limits access to healthcare services and can discourage individuals from seeking vaccinations due to the cost of travel, time off work, or perceived costs of the vaccines themselves (Paul et al., 2015). In many rural areas, low levels of formal education and literacy also hinder vaccine awareness. People with limited education may struggle to understand vaccine-related information and may not fully grasp the importance of immunization for public health. Additionally, rural populations often have less exposure to public health campaigns and materials, further compounding the lack of knowledge about the benefits of vaccination (Mills et al., 2005). This gap in awareness can perpetuate health disparities, leaving rural populations more vulnerable to vaccine-preventable diseases.

(b) Cultural and Social Factors

Cultural beliefs and social norms can significantly impact perceptions of vaccines in rural areas. In some communities, traditional or religious beliefs may conflict with vaccination practices, leading to skepticism or outright rejection of vaccines. Social norms, particularly those around trust in healthcare authorities and acceptance of modern medical interventions, can vary widely in rural areas. In some cases, local customs may prioritize traditional medicine over vaccinations, or there may be a deep mistrust of government-led health initiatives, especially if previous

encounters with the healthcare system have been negative (Leask & Chapman, 1998). Such mistrust can be compounded by social influencers within the community, such as religious or traditional leaders, who may discourage vaccination due to their own beliefs or misinformation. Addressing these barriers requires culturally sensitive approaches that engage local leaders and integrate traditional knowledge with modern healthcare practices (Harvey, 2013).

(c) Misinformation and Vaccine Hesitancy

Misinformation about vaccines is a pervasive issue that exacerbates vaccine hesitancy, particularly in rural areas where access to accurate health information is often limited. The spread of misinformation about vaccine safety, side effects, and efficacy can create fear and uncertainty, leading individuals to delay or refuse vaccination altogether. Studies have shown that in rural communities, where healthcare resources and trustworthy health communication are scarce, misinformation tends to circulate more widely through informal networks such as social media, community gatherings, and word-of-mouth (Larson et al., 2014). This is further compounded by the fact that rural populations may have less access to credible health information sources, relying instead on local channels that may propagate unverified or false claims about vaccines. The Covid-19 pandemic highlighted how misinformation could fuel vaccine hesitancy, leading to lower vaccine uptake in many rural areas globally (Jamison et al., 2020). Combating this misinformation requires targeted health communication campaigns that debunk myths and promote evidence-based information about vaccines.

(d) Technological Barriers

Limited access to digital information and technology in rural areas presents another challenge to disseminating accurate vaccine-related information. Many rural communities have insufficient internet coverage, making it difficult for residents to access online public health campaigns, social media updates, or other forms of digital communication that promote vaccine awareness (Smith et al., 2015). The digital divide in rural areas means that important health messages about the availability, safety, and benefits of vaccines may not reach the people who need them most. Furthermore, those who do have access to digital technology may not have the digital literacy required to critically evaluate the information they encounter, making them

more vulnerable to misinformation (Robinson et al., 2017). These technological barriers highlight the need for alternative forms of communication, such as radio broadcasts, mobile health campaigns, and in-person outreach, to ensure that rural populations are informed about vaccines.

2.3 Impact of Covid-19 on Human Development in Rural Areas

Health is a fundamental pillar of human development, serving as a foundation for individuals to achieve their full potential and contribute to economic and social progress. In rural areas, health is particularly critical due to pre-existing disparities in access to healthcare infrastructure and resources. The Human Development Index (HDI) includes health as one of its core dimensions, emphasizing the role of life expectancy and overall well-being in human development. Literature highlights that poor health outcomes limit productivity, reduce educational attainment, and perpetuate cycles of poverty in rural communities (UNDP, 2020). Covid-19 has exacerbated these challenges, placing additional strain on already limited healthcare services and disproportionately affecting rural populations, who often lack sufficient medical facilities and healthcare professionals (Bardosh et al., 2020). Consequently, the pandemic has widened the health inequities between urban and rural areas, threatening long-term human development prospects.

2.3.1 Impact of Covid-19 on Rural Economies

The economic consequences of the Covid-19 pandemic have been particularly severe for rural economies, which rely heavily on agriculture, informal sectors, and small-scale industries. Lockdowns, movement restrictions, and supply chain disruptions have led to decreased agricultural productivity and limited access to markets for rural farmers, negatively impacting income and food security (FAO, 2021). Additionally, many rural inhabitants who work in informal sectors, such as day laborers or small business owners, have faced significant financial hardship due to reduced demand and economic slowdowns. These economic challenges have had a cascading effect, worsening poverty levels and making it harder for rural households to afford basic services such as healthcare and education (ILO, 2020). In the long run, the economic setbacks caused by the pandemic may reverse progress in poverty reduction and human development in rural areas.

2.3.2 Education Disruptions Due to the Pandemic

The Covid-19 pandemic has severely disrupted education systems worldwide, with rural areas being among the hardest hit. In many rural communities, school closures have deprived children of access to formal education, while limited access to digital learning platforms has exacerbated educational inequalities (UNESCO, 2020). Unlike urban areas, where students may have access to online learning tools, rural areas often lack the necessary infrastructure, such as reliable internet connectivity and digital devices. As a result, children in rural areas have faced greater learning losses, which could negatively affect their future opportunities for human capital development. Studies suggest that prolonged school closures and inadequate access to remote learning resources in rural areas may lead to higher dropout rates, lower literacy levels, and reduced educational attainment, further widening the gap between urban and rural educational outcomes (UNICEF, 2021).

2.3.3 Long-Term Consequences for Human Development

The long-term impacts of the Covid-19 pandemic on rural human development are likely to be profound and multifaceted, affecting health, education, and economic progress. In terms of health, the pandemic may result in long-lasting effects on population health due to delayed healthcare access and increased vulnerability to future health crises. Economically, rural areas may struggle to recover from the income losses and disruptions to agricultural and informal sectors, which could lead to sustained poverty and food insecurity. Furthermore, the educational disruptions caused by the pandemic may hinder the development of human capital, limiting future job opportunities and economic mobility for rural children. The cumulative effects of these challenges could lead to a significant setback in human development progress in rural areas, undermining efforts to achieve sustainable development goals (SDGs) related to health, education, and economic growth (World Bank, 2021).

2.4 Strategies to Improve Vaccine Awareness and Uptake in Rural Areas

Public health interventions that have succeeded in rural areas often prioritize culturally sensitive and accessible communication strategies. Several case studies highlight the importance of adapting health education campaigns to local contexts to ensure their effectiveness. For instance, vaccination campaigns in rural Africa, such as the Expanded Programme on Immunization (EPI), successfully increased

immunization coverage by leveraging local customs and incorporating community engagement. The campaign's success can be attributed to its participatory approach, which involved training local health workers, using traditional communication channels, and addressing the specific concerns of rural populations (WHO, 2020). In the case of Covid-19, public health efforts must similarly tailor their strategies to fit the unique needs of rural areas, focusing on overcoming mistrust and logistical challenges.

2.4.1 Community-Based Approaches to Vaccine Awareness

Community leaders and local organizations play a pivotal role in fostering vaccine awareness in rural settings. Studies show that trusted figures such as religious leaders, village chiefs, and community health workers are crucial in dispelling myths and misinformation about vaccines (Gauri & Galef, 2021). In rural India, for example, community health workers known as Accredited Social Health Activists (ASHAs) were instrumental in promoting vaccination during the polio eradication campaign. Their close ties with the community allowed them to effectively communicate the benefits of vaccination and address vaccine hesitancy (Dutta, 2021). By engaging local influencers and integrating community-based health approaches, vaccination campaigns can improve their outreach and acceptance in rural areas.

2.4.2 Technology and Media in Health Education

In regions with limited infrastructure, technology and media have proven to be effective tools for disseminating health information. Radio and television broadcasts, as well as mobile phone messaging, are particularly useful in reaching rural populations with limited access to health facilities. For instance, mobile health (mHealth) initiatives have been employed in rural Africa to deliver timely vaccine reminders and education about immunization schedules (Levin et al., 2020). During the Covid-19 pandemic, radio campaigns have been employed in countries like Uganda and Malawi to raise awareness about the importance of vaccination, while text messaging services have been used to counter misinformation and provide accurate vaccine information (Nachega et al., 2021). These media platforms enable governments and NGOs to reach remote populations with critical health information, improving vaccine uptake.

2.4.3 Government and NGO Initiatives

Both government and non-governmental organizations (NGOs) have played critical roles in increasing vaccine awareness and accessibility in rural areas, particularly during the Covid-19 pandemic. Government initiatives, such as mass vaccination drives and mobile health clinics, have been essential in reaching rural populations where healthcare infrastructure is lacking (UNICEF, 2021). NGOs have complemented these efforts by conducting grassroots awareness campaigns, distributing educational materials, and providing logistical support for vaccine distribution. For example, the Global Alliance for Vaccines and Immunization (GAVI) has worked extensively in rural areas to increase vaccine access by partnering with local governments and community groups (GAVI, 2020). These coordinated efforts have been essential in ensuring that rural populations are not left behind in global vaccination campaigns.

2.5 Theoretical Background for Vaccine Awareness

2.5.1 Health Belief Model

The Health Belief Model (HBM) is one of the most widely used theoretical frameworks for understanding health behaviors, including vaccine awareness and decision-making. HBM posits that individuals' decisions to engage in preventive health behaviors—such as getting vaccinated—are influenced by their perceptions of susceptibility to a disease, the severity of the disease, the benefits of taking action (e.g., vaccination), and the barriers to taking that action (Rosenstock, 1974). In rural populations, these factors may be compounded by local beliefs and access to healthcare services. For example, individuals in rural areas may underestimate their risk of contracting Covid-19 due to geographic isolation, or they may face logistical barriers such as distance to health facilities. In studies of vaccine hesitancy, the HBM has been particularly useful in identifying the key psychological factors that influence vaccine acceptance, such as perceived barriers related to misinformation or lack of trust in the healthcare system (Jones et al., 2015).

2.5.2 Theory of Planned Behavior

The Theory of Planned Behavior (TPB) offers another valuable framework for understanding vaccine intentions and uptake, particularly in rural communities. The TPB asserts that an individual's behavioral intentions are shaped by three factors:

their attitudes toward the behavior, subjective norms (i.e., social pressures), and perceived behavioral control (Ajzen, 1991). When applied to vaccine awareness, TPB helps to explain how rural individuals form intentions to get vaccinated based on their attitudes toward vaccines (whether positive or negative), the influence of community or social groups (such as family or religious leaders), and their perceived ability to access vaccines. For example, rural residents may feel more pressure to conform to the norms of their local community, where vaccine acceptance might be low due to cultural beliefs or misinformation. Additionally, if individuals perceive limited control over accessing vaccines due to logistical or financial barriers, they are less likely to develop strong intentions to get vaccinated, even if they understand the benefits (Godin et al., 2008).

2.5.3 Diffusion of Innovations Theory

The Diffusion of Innovations Theory, introduced by Rogers (1962), explores how new ideas, behaviors, or technologies spread within a community. When applied to vaccine awareness in rural areas, this theory helps explain how information about vaccines—such as their safety, effectiveness, and availability—is disseminated through social networks and adopted by different groups. The theory categorizes individuals into groups such as innovators, early adopters, early majority, late majority, and laggards based on how quickly they accept new ideas. In the context of rural communities, early adopters, such as respected local leaders or healthcare workers, can play a crucial role in influencing others' vaccine decisions. Research shows that when key influencers within a community endorse vaccination, others are more likely to follow (Dearing & Cox, 2018). However, the slow diffusion of vaccine-related information in rural areas—due to factors like limited access to mass media or social media—can result in slower uptake of vaccines compared to urban centers.

2.6 Review on Previous Studies

On reviewing the literature, there are a lot of papers showing various results when conducting assessment for knowledge, attitude and practice about covid-19 vaccine all over the world.

Choudhary, Sujata Murarkar and Patil (2021) studied knowledge, attitude and practice about COVID Vaccination among the beneficiaries attending the COVID

vaccine OPD among the selected 417 people of Pune city, India through a cross-sectional study. About 81% (337) of the participants were aware of the COVID19 vaccines given in India, whereas 79 (18.9%) were not aware of that, 153 (36%) were not clear about the two doses of the vaccination. More than 97% (408) believed that practicing hand hygiene, mask use, and social distance reduces the risk of COVID19 transmission. Maximum participants 414 (99.2%) practice hand hygiene, use of mask, and social distance post COVID19 vaccination. The majority of the 408 (97.8%) booked an appointment online. Maximum participants 240 (57.55%) didn't experience difficulty getting online appointments, whereas 177 (42%) faced the challenge.

Yisak et al. (2022) studied Knowledge, attitude, acceptance, and practice of COVID-19 vaccination and associated factors complemented with constructs of health belief model among the general public in South Gondar, Ethiopia through a cross-sectional study. The study found that among the 1111 participants of general population, about 575 (51.8%) of the respondents have good knowledge about the COVID-19 vaccination and 43.4% have a positive attitude toward COVID-19 vaccination. About 361 (32.5%) of the respondents were willing to take the vaccine if it is available and 113 (10.2%) of them were vaccinated. Participants with a positive attitude and good knowledge, those with a secondary level of education AOR = 5.70, 95% CI (2.60–12.60), those with a monthly income of >2,000 birr AOR = 6.30, 95% CI (2.50–15.60), those having a television (TV), and those who use Facebook AOR = 17.70, 95% CI (10.10–30.90) had a higher level of acceptance of COVID-19 vaccination.

In another cross-sectional study done by Sonmezer et al. (2022) that studied knowledge, attitudes, and perception towards COVID-19 vaccination among the adult population, among 1009 participants in Turkey, 62.7% of participants had positive perceptions of COVID-19 vaccines. Logistic regression analysis results showed that older people (≥ 30 vs. <30) were less likely to have a positive perception towards COVID-19 vaccines (OR = 0.70, 95% CI = 0.51–0.94). We also found participants who had a previous history of influenza vaccines (OR = 2.01, 95% CI = 1.43–2.84), bachelor's degrees or above (OR = 1.47, 95% CI = 1.12–1.91), and a personal history of COVID-19 (OR = 1.58, 95% CI = 1.10–2.26) were more likely to have a positive perception regarding COVID-19 vaccines.

In another cross-sectional study about vaccine acceptance, knowledge, attitude and practices regarding the covid-19 pandemic among the dentists registered at the

Trinidad and Tobago Dental Association by Rafeek, Sa and Smith, 2023, the majority of respondents had excellent knowledge of COVID-19 (94.8%): use of personal protective equipment (98.7%) and N95 masks (93.5%), but had poor knowledge about the reuse of N95 masks (27.5%). A total of 34.9% were comfortable providing emergency care to positive or suspected cases of COVID-19, and 64.5% were afraid of becoming infected from a patient. PPE usage was reported at 97.4% and 67.3% for N95 masks. All surfaces of waiting areas were disinfected every 2 hour by 59.2%. A total of 90.8% agreed to be vaccinated straight away if a vaccine were made available.

Mouna Baklouti et al. (2023) studied knowledge, attitude, practices regarding COVID-19 vaccination among health care professionals in southern Tunisia in a cross-sectional study and stated that among 300 health care workers, nearly the two-thirds of the study population had good knowledge, over than the half of HCP had positive attitudes and more than 70% of the participants had good practices towards COVID-19 vaccination.

Although there are many surveys conducted in different countries of the world regarding knowledge, attitude and practice of covid-19 vaccination, there are just few research papers conducted in Myanmar.

According to a rapid community survey to assess knowledge, attitudes and practices (KAP) survey on covid 19 vaccination conducted to 355 adults and 131 caregivers by UNICEF from July to October 2022 in Myanmar, a little less than a quarter of adult respondents had not availed of the COVID-19 vaccination and 8 percent had taken only the first dose. The uptake of the COVID-19 vaccination has been quite low among women (43%). Forty three percent of lactating mothers had not availed even a single dose and the same can be attributed to a myth that vaccines have a negative impact on the breastfed child. Further, 45 percent of the respondents with disability have not availed the COVID-19 vaccination. The highest proportion of respondents who have not availed even a single dose of the vaccine among various age groups was in the 18-34 years (28%) pointing to the need to generate awareness and positive acceptance among this age group. (UNICEF MYANMAR, 2023)

In this survey, unavailability of vaccine is a key barrier for uptake of COVID-19 vaccination and other significant barriers include fear of side effects (15%), lack of information on the vaccine (16%), rumours on ineffectiveness of vaccines (6%), low or no trust on vaccine (3%) and low or no trust on service providers (1%). Some

other barriers include the myth that the vaccine can affect unborn and/or breast fed children and thus pregnant and lactating mothers are staying away from getting vaccinated against COVID-19. Preoccupation with work or other responsibilities and health reasons (there exists a myth that people who are suffering from chronic illnesses should not get vaccinated) are other barriers. (UNICEF MYANMAR, 2023)

Regarding safety of the vaccine, this rapid survey revealed that the trust on COVID-19 vaccines was low and there were doubts regarding their safety and efficacy. Fourteen percent of the adult respondents did not perceive COVID-19 vaccines available in the country to be safe and another 17 percent said that they were not aware about the safety of the vaccines. (UNICEF MYANMAR, 2023)

Regarding the information on covid-19 vaccination programs, in the survey, 66 percent of the adult respondents reported having received information on COVID-19 vaccination prior to getting vaccinated. The main type of information received included date/site of vaccination, eligible groups for vaccination, common side effects, type of vaccine, dosage and population groups who should not be vaccinated. The most depended upon sources of information for local communities were health workers, social mobilisers, etc.(173) followed by social media (157), family members/peers/colleagues (139), Television (119), announcements by ethnic community and religious leaders (115), posters, flyers, banners and billboards (107). (UNICEF MYANMAR, 2023)

In another study done in towns of Rakhine state of Myanmar in 2022, 91.3% (n = 252) of 276 participants accepted the COVID-19 vaccines provided by MOH to immunize themselves or their family members, with 8.7% (n = 24) expressing vaccine hesitation. The COVID-19 vaccination was accepted 100% in Toungup township, (95.8%) in Kyauktaw township, (91.7%) in Buthedaung, Maungdaw, Sittwe, Ponnagyun, Mrauk-U, Thandwe, Ann, and Kyaukpyu township, (87.5%) in Rathedaung township, and (83.3%) in Pauktaw township. The acceptance percentages for people between the ages of 18 and 40 were almost comparable (87.2% vs. 87.5%), according to age group. The vaccine acceptability rate then increased linearly, starting at 94.1% in the 41–50 age range and reaching (97%) in those over 50. (Simon et al., 2023)

In this study, when correlating the factors associated with the acceptance of the covid-19 vaccine, the higher vaccine acceptance proportions were found in over 50 years aged group (97.0%), males (92.9%), urban (94.4%), high-school and above education group (99.1%), clerical and professional/ technical/ managerial occupation group (100.0%), more than 200,000 MMK (111 USD) monthly income group (98.0%), singles (92.3%), and health related sector (91.5%) compared to their counterparts. Although age, gender, urbanicity, religion, marital status, and employment status were not statistically linked to vaccine acceptability, significant relationships between vaccine acceptability and education ($P = 0.003$), occupation ($P = 0.001$), and monthly income ($P = 0.003$) were found respectively. (Simon et al., 2023)

Also in this study, when correlating the vaccine acceptance with the experience of covid-19 infection, history of COVID-19 infection, hospitalization history, and experiences with severe sickness or death had no noticeable effects on vaccination uptake. However, the emergence of vaccine side effects following prior immunization was associated with consent to future immunization ($P = 0.034$), and prior immunization with COVID-19 was statistically associated with vaccine acceptance for subsequent immunization ($P = 0.001$). (Simon et al., 2023)

CHAPTER III

COVID-19 PANDEMIC SITUATIONS IN MYANMAR

3.1. Introduction to Covid-19 pandemic in Myanmar

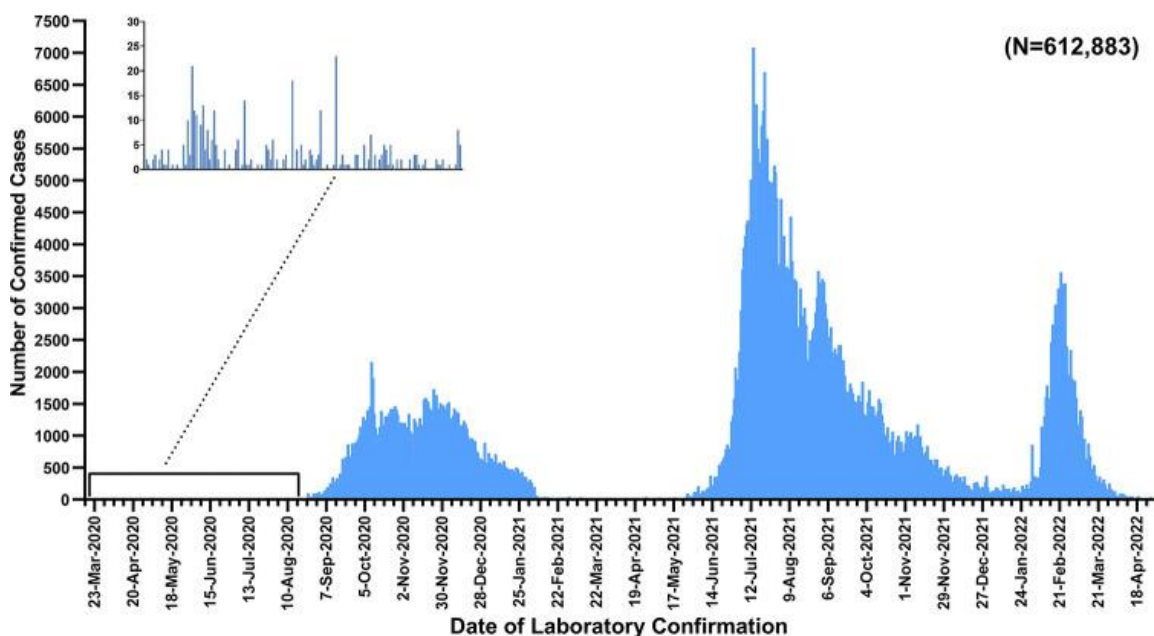
The new coronavirus 2019-nCov, commonly known as SARS-Cov-2, was declared by the World Health Organization's International Health Regulations (IHR) Emergency Committee as a hazard to all states on January 23, 2020. The committee found that "all nations should be prepared for containment, including active surveillance, early diagnosis, separation, and case treatment, contact tracing, and prevention of further transmission of 2019-nCoV infection, as well as extensive data exchange with WHO." The COVID-19 outbreak was labeled a global public health emergency by the WHO on January 30, 2020. On March 23rd, 2020, the first two COVID-19 cases were detected in Myanmar. On March 23rd, 2020, two Myanmar residents returning from other countries became the country's first two COVID-19 cases. By the beginning of August, Myanmar had only documented 360 confirmed COVID-19 cases and six deaths. (Christina, N., 2022)

Nevertheless, the majority of additional daily cases reported has grown dramatically since mid-August. The root of this spike was an increase in locally transmitted cases, which climbed from five cases per day in mid-August to 1,137 cases per day in mid-October. As of October 21, 2020, there had been 39,696 confirmed infections and 972 fatalities. Almost all verified cases (99%) were caused by local transmission; the remaining 1% were in returnees from overseas trip to Myanmar. In every site, they have confirmed instances. Yangon (31,137 cases) accounted for about four-fifths of the total count of confirmed cases as of October 21, 2020, followed by Rakhine (2,625), Bago (1,773), Mandalay (1,298), Ayeyarwaddy (753), and Mon (562). Other areas have fewer than 400 verified cases. Men account for a greater number of confirmed cases in Myanmar (53%), with the majority of cases occurring between the ages of 20 and 50. (Christina, N., 2022)

On reviewing the transmission of covid-19 infections in Myanmar, there were mainly four major waves of transmission and further minor waves of transmissions arose following the former four waves. According to Ministry of Health (MOH) data, there were 374 confirmed cases (0.73 per 100,000 population) and 6 deaths (0.01 per 100,000 population) with 1.60% case fatality rate (CFR) during the first wave of the epidemic. The second wave started in mid-August 2020 in Rakhine State and the

disease spread to the whole country. There were 142,944 confirmed cases (278 per 100,000 population) with 3,210 deaths (6 per 100,000 population) and 2.25% CFR during the second wave. Myanmar has also faced a rapid-surfed third wave which started at the end of May 2021. Delta variant rapidly spread throughout the country with the highest impact on lives and the economy. In the third wave, there were 391,353 confirmed cases (760 per 100,000 population) and 16,094 deaths (31 per 100,000 population) with 4.11% CFR. On 28th December 2021, the Omicron variant (B.1.1.529) was firstly detected in 4 confirmed cases who returned from Dubai, the United Arab Emirates. After detection of Omicron variants, the confirmed cases surged again starting from 28th January 2022, particularly in Yangon Region, and then the fourth wave of COVID-19 was started in Myanmar. The highest number of confirmed cases (3,563) and deaths (7) were reported in the fourth week of February 2022. (Htun et al., 2023). The pattern and total case loads of first four waves of covid-19 pandemic in Myanmar is illustrated in graph in figure (3.1) as below.

Fig (3.1) Epidemic curve with different waves of COVID-19 epidemic in Myanmar (Source: Ministry of Health, Myanmar)



So far, there have been 641873 cases of confirmed covid-19 infection in Myanmar with total 19495 cases of death due to covid-19 infection and 620159 cases of total recovered cases. (www.worldometers.info, n.d.). Now, new covid-19 cases

are very much low as in most countries around the world. (www.worldometers.info, n.d.). Most governments of the world countries are now focusing on the vaccination measures against covid-19 as a major way to prevent further surge of covid-19 infection in the world.

3.2 Impact on Public Health

Pandemic has affected the provision of other essential health services, including family planning, maternity care, HIV antiretroviral medication, and an expanded vaccination program. (Christina, N., 2022). Since early 2020, after discovery of covid-19 cases in Myanmar, public health surveillance systems including for communicable diseases have been severely disrupted, affecting overall capacity for early detection, verification, and rapid response to these diseases. Currently, national reporting systems including the District Health Information Software 2 (DHIS2) are no longer functional, making it difficult to capture granular information on key indicators of health programmes and status of Myanmar's overall health system and health services. There also continues to be a shortage of health care workers due to many government workers being involved in the civil disobedience movement. (Public Health Situation Analysis Myanmar - SEAR/WHO, 2022)

The first wave of the COVID -19 pandemic in March 2020 affected many aspects of the health system in Myanmar including routine vaccination (RI), which was suspended for three months and resumed until the military takeover on 1 February 2021, after which EPI activities showed further decline in all states and regions (less so in Rakhine state). As a result, EPI coverage dropped below 50% or more for many vaccination types in 2021. (Public Health Situation Analysis Myanmar - SEAR/WHO, 2022)

3.3 Economic and Social Impacts

Covid-19 pandemic had huge social and economic burden on the people worldwide. The pandemic seriously disturbed the different markets, economic systems and damaged the livelihoods of the people all over the world. The COVID-19 pandemic sent shock waves through the world economy and triggered the largest global economic crisis in more than a century. The crisis led to a dramatic increase in inequality within and across countries. The crisis had a dramatic impact on global poverty and inequality. Global poverty increased for the first time in a generation, and

disproportionate income losses among disadvantaged populations led to a dramatic rise in inequality within and across countries. According to survey data, in 2020 temporary unemployment was higher in 70 percent of all countries for workers who had completed only a primary education. Income losses were also larger among youth, women, the self-employed, and casual workers with lower levels of formal education. (The World Bank, 2022)

On reviewing the literature, the studies that explored the community perceptions of social and economic impacts of covid-19 in Myanmar, respondents from nearly all communities perceived that COVID-19 caused widespread income loss. Unskilled laborers were viewed to be the most affected group in rural and urban communities, followed by households with young children or elderly members. (Lambrecht, Derek Headey and Than Zaw, 2020)

Although there were significant observable impacts of covid-19 on economic activities in Myanmar, studies about it, were done mainly in 2020. In an UN study, the economic impact was hardest felt among tourism companies and companies operating in the textile and garment industry. In this study, manufacturing industry was expected to be hardest hit by COVID-19 and that 6.9 to 7.3 million jobs (about 37% of pre-crisis employment) across sectors are at risk of being disrupted. (Lee Zu Xian, 2020)

Covid-19 pandemic had effects on peace, livelihood of the people and rule of laws. COVID-19 hit Myanmar when the country was experiencing a steady increase in active conflict and a slowdown of progress in the peace process. In and outside of conflict zones, communities face significant stress as a result of the pandemic on a competitive labour market, with large-scale lay-offs in the most affected sectors and the return of tens of thousands of migrant workers. In urban areas, informal settlements and slums suffer disproportionately from this crisis due to their dense populations, inadequate housing, water and sanitation, little or no waste management, overcrowded public transport and limited access to social services. There had been accusation about national elections by political parties due to restriction of movement among public by stay at home orders and orders for limited gathering of people by the government. Another significant effect of covid-19 pandemic regarding law enforcement is surge in criminality due to financial hardship and scarcity of well paid jobs. There is rise of production, trafficking of illicit drugs and illicit cross-border trade. (Socio-economic impact of covid-19 in Myanmar, 2020)

3.4 Vaccine roll-out in Myanmar

Soon after the successful development of effective and relatively safe vaccine against covid-19 in the world in the late 2020, Myanmar was able to coordinate with the GAVI COVAX Facility and bilaterally with the friendship countries which were producing COVID19 vaccines. Myanmar contracted to buy 30 million doses of vaccines from India at the end of 2020. Although the GAVI COVAX Facility has delivered the COVID-19 vaccine supplies to other member states up to Round-4, there were several postponements regarding the vaccine delivery to Myanmar due to COVID19 pandemic situation. After political chaotic situations that happened around early February 2021, the newly arising government guided and encouraged to get more COVID-19 vaccines and consequently to scale up the vaccination program as per one of the prioritized tasks. In this way, 23 million doses of COVID-19 vaccines from government procurement and donation by friendship countries have arrived in Myanmar as of 2nd October 2021. Furthermore, Myanmar received additional 14 million doses of COVID-19 vaccines following donation and procurement from the People's Republic of China towards the end of 2021. Myanmar was also working with friendship countries in order to produce COVID-19 vaccines locally. To promote private sector participation, the Ministry of Health has allowed private sectors to import COVID-19 vaccines according to rules and regulations and has urged to take part in COVID-19 vaccination program. (Press release on updated status of cooperation with the Ministry of Health and the Gavi Covax Facility on COVID-19 vaccination , 2021)

The first covid-19 vaccine arriving Myanmar, was Covishield/ Astra Zeneca, manufactured from Covax facility, India. Later, various types of covid vaccines became available and were administered. Initially, 24 target groups including elderly people, health staffs, were selected for vaccination against covid-19 and later children under 18 years down to the age of 5 years were approved for covid-19 vaccination. (Press release on updated status of cooperation with the Ministry of Health and the Gavi Covax Facility on COVID-19 vaccination , 2021; COVID-19 VACCINATION: FIRST DOSE FOR SCHOOL CHILDREN 61.47% COMPLETED, 2022)

In the following table, timelines for roll-out of different covid-19 vaccines in Myanmar, were summarized.

Table (3.1) Timelines for roll-out of different covid-19 vaccines in Myanmar

Sr No	Name of covid-19 vaccine	Roll-out date in Myanmar	Manufacturer	Country of origin
1.	Covishield/ Astra Zeneca	January 2021	Covax facility	India
2.	Sinovac	May 2021	Sinovac Biotech	China
	Sinopharm	June 2021	Sinopharm	China
3.	Pfizer-BioNTech	August 2021	Pfizer, BioNTech	USA
4.	Sputnik Light	September 2021	Gamaleya Research Institute of Epidemiology and Microbiology	Russia
5.	Moderna	April 2022	Moderna Inc	USA
6.	Covaxin	October 2022	Bharat Biotech	India
7.	Myancopharm	October 2022	Myanmar ministry of industry, Sinopharm	Myanmar

(Source: Ministry of Health, Myanmar)

3.5 Current status of pandemic in Myanmar

The covid-19 pandemic was declared ended from the status of public health emergency of international concern by WHO in May 2023. (Anon, n.d.).The main reason behind the ending of the pandemic was obvious decrease in daily transmission of covid-19 cases due to development of herd immunity among the people all over the world because mainly of accelerated mass covid-19 vaccination. Now, the daily case load of covid-19 becomes single digit but the covid-19 vaccination is currently in routine immunization schedule with regular booster dose to maintain the immunity of the people against covid-19. ((www.worldometers.info, n.d.; Health, 2020)

CHAPTER IV

SURVEY ANALYSIS

4.1 Survey profile

According to 2014 Myanmar Census data, Hlegu township has a total population of 270741, ranking 8th most populated township out of 46 townships in Yangon region. (themimu.info, n.d.). Phaunggyi village, one of largest villages in not only in Hlegu, but also in Yangon region, has total population of 14460 with 1856 household. (Township Immigration department, Hlegu). Regarding data of covid-19 vaccination, Hlegu township had vaccine coverage of 89% and Phaunggyi sanpya village had 90% in 2023. (Hlegu township public health data, 2023). For survey, 300 respondents from seven wards and one village of Phaunggyi sanpya village, were randomly selected. Survey data were collected and data were analyzed by Microsoft Excel 2016.

Sample size calculation to obtain the minimum require sample size is described as the following formula,

$$n = \frac{N}{1 + Ne^2} = \frac{14460}{1 + 14460(0.06)^2} = 273$$

where n = total sample size
 N = population size (14460)
 e = margin error (6%)

According to this, the required sample size for this study is 273. In this study, sample size of 300 is selected applying simple random sampling method.

4.2 Survey Design

The questionnaire composed of five different parts. Part I contains questions concerned with socio-demographic data. Part II contains Livelihood questions which are again divided into general livelihood questions, questions concerned with farming and concerned with livestock. Part III contains questions concerned with knowledge about covid-19 vaccine. Part IV contains questions concerned with general attitude about covid-19 vaccine and questions concerned with attitude of people regarding their livelihood. Part V contains questions about the practice of covid-19 vaccination. Knowledge scores were categorized into low, medium and high groups using Gloom's

cut-off point. Attitude scores were also categorized into positive, neutral and negative attitude groups by using Gloom's cut-off point. Practice scores were also categorized into good, moderate and bad practice groups, by using Gloom's cut-off point.

4.3 Survey Results

4.3.1 Socio-Demographic Characteristics of the Respondents

Table (4.1) Socio-Demographic Characteristics of the Respondents

Item	Particular	Number	Percent (%)
Gender	Male	112	37.33
	Female	188	62.66
Age	18-39	170	56.67
	40-59	88	29.33
	>60	42	14.00
Race	Kachin	3	1
	Kayin	12	4
	Chin	3	1
	Burmese	274	91.33
	Mon	1	0.3
	Rakhine	6	2
	Other	1	0.3
Types of Religion	Buddhist	290	96.66
	Christian	8	2.67
	Islam	2	0.67
Marital status type	Single	36	12.00
	Married	248	82.66
	Other	16	5.33
Household size	<3	38	12.66
	(3-5)	248	82.66
	(6-8)	10	3.33
	>8	4	1.33

Education	Primary school	55	18.33
	Middle school	112	37.33
	High school	90	30
	Bachelor degree	36	12
	Illiterate	7	2.3

(Source : Survey Data, 2024)

Age and gender distribution of all the respondents are shown in the table (4.1). Out of 300 respondents, 112 respondents (37%) were male and 188 respondents (63%) were female. When the respondents were classified into three different age groups: (18-39) year, (40-59) year and (>60) year, young age group (18-39 year) is most common, followed by middle age group (40-59 year) and elderly group (>60 year) was the least common. Interestingly, the youngest age of the respondent was 18 year and the eldest was 73 year.

Types of the race of the respondents included in the survey are shown also in the table (4.1). Most common race participated in the survey were Burmese, representing 91.33% of all respondents. Other ethnic races are rare in the respondents. Notably, there were some Kayin and Rakhine people residing in the Phaunggyi village area.

The types of religion of the respondents are shown in the table (4.1) again. Out of 300 respondents included in the survey, Buddhists were most common by 290 in number, about 97% of the respondents. There were some Christians and few Muslims.

The marital status of the respondents is also shown in table (4.1). Most respondents (83% of the total) were married. Thirty six respondents (12%) were single and other group which comprised of divorced, separated and widowed persons, included 16 respondents (5%).

The presence of under-18 children in the family of the respondents are shown in the table (4.1). Among 264 respondents who are married, 220 respondents (83%) had under-18 year old children and 44 respondents (17%) did not have under-18 year old children.

The number of under-18 children among the respondents who are married and have under-18 year children, are shown in the table (4.1). Among the 220 respondents

who had under-18 children, 128 respondents (58%) had one child, 74 respondents (34%) had two children, 12 respondents (5%) had three children, 4 respondents (2%) had four children and two respondents (1%) had five children.

The household sizes of the respondents are also shown in the table (4.1). Household sizes were classified into four different sizes: household that contained less than three people, household that contains 3 to 5 people, household that contained 6 to 8 people, household that contained more than eight people. Most respondents (83%) have the household that contained 3 to 5 people. Second most is the household that contained less than three people. Two other household groups were less common among the respondents.

The education status of the respondents is shown in the table (4.1). Most respondents (37%) reached middle school education and 30% of the respondents reached high school education. Eighteen percent of the respondents completed just primary education level and 12% of the respondents were graduates, holding a bachelor degree. Surprisingly seven respondents (2%) were illiterate. It was found that women were higher in percentage both in lower and higher education groups.

4.3.2 Livelihood indicators

Table (4.2) Livelihood Conditions of Respondents

Item	Particular	Number	Percent (%)
Occupation (farm/ non-farm works)	Farm works	41	13.66
	Non-farm works	259	86.33
Years of experience in farming	Under 10	10	3.3
	10 to <20	15	5
	20 to 30	3	1
	Above 30	3	1
Acres of farm land that the respondent owned	<5 acres	19	6.3
	5 to 10 acres	10	3.33
	>10 acres	2	0.66
Kind of breeding animal	Chicken	13	4.33
	Duck	3	1

	Cows	6	2
	Buffalo	1	0.33
	Pig	12	4
	Goat	1	0.33
Number of type of breeding animal	1 type	13	56.52
	2 types	9	39.13
	3 types	0	0
	4 types	1	4.35
Number of breeding animal	<10	9	3
	(11-30)	8	2.66
	(31-50)	4	1.33
	(51-100)	1	0.33
	(101-200)	1	0.33

(Source : Survey Data, 2024)

The table (4.2) showed the nature of occupation whether it was farm or non-farm works. Respondents who were doing farm works, accounted for 13.7% of the total respondents while those who were doing non-farm works, accounted for 86.3% of the total.

Years of experience in farming is shown in the table (4.2). Out 31 respondents working with farming, 15 respondents (48%) worked for 10 to 20 years, 10 respondents (32%) worked for less than 10 year, 3 respondents (10%) worked for 20 to 30 years and 3 respondents (10%) worked for more than 30 years.

Farming areas that the respondents have practiced, among the respondents that worked with farming, are also shown in the table (4.2). Nineteen respondents (61%) had less than 5 acres for farming while 10 respondents (32%) had 5 to 10 acres for farming and 2 respondents (6%) had more than 10 acres for farming.

The number of type of breeding animals in the livestock breeders is shown in the table (4.18). Among 23 livestock breeders, 13 respondents (56.52%) bred one type of animal, 9 respondents (39.13%) bred two types of animals and one respondent (4.3%) bred four types of animals.

The number of breeding animals in the 23 livestock breeding respondents is also shown in the table (4.2). Nine respondents (39%) bred less than 10 animals and

they were mainly cows and buffalos. Eight respondents (35%) bred animal number between 11 and 30 and these animals were mainly pigs. Four respondents (17%) bred animal number between 31 and 50 and they were ducks and chicken. One respondent (4%) bred animal number between 51 and 100 and another one respondent (4%) bred animal number more than 100. These large numbers of animals that the respondents bred, were chicken.

Table (4.3) Occupation, Income and Saving of Respondents

Item	Particular	Number	Percent (%)
Type of Occupation	Farming+livestock	13	4.33
	Farming	18	6
	Livestock	10	3.33
	Government staff	17	5.66
	Non-government staff	58	19.33
	Private business	90	30
	Manual labour	52	17.33
	Dependent	42	14
Family monthly income level	<150000	44	14.66
	150000-300000	185	61.66
	300001-450000	45	15
	450001-600000	11	3.66
	>600000	15	5
Can make saving	Yes	123	42.33
	No	177	59
Saving amount per month	<50000	27	22
	50000-100000	70	57
	100001-200000	14	11
	200001-300000	4	3
	>300000	8	7

(Source : Survey Data, 2024)

The occupations of the respondents were shown in table (4.3). Ninety respondents (30%) owned the private businesses which were mainly small grocery shops, small restaurants and small size manufacturing works. Non-governmental staffs accounted for 19.3% of the respondents and mainly, they were staffs of private factories which were abundant in the Hlegu township. 52 respondents (17.3%) were doing manual labour and 42 respondents (14%) were dependent. Respondents who do rural works such as farming, livestock or both, were less common, with 6% for farming only, 3.3% for livestock breeding only and 4.3% for both farming and livestock breeding. A few respondents (5.7%) were government staffs, working at different departments within the Phaunggyi region.

The family monthly incomes of the respondents, are also shown in table (4.3). The family monthly incomes of the respondents were classified into five different classes of income level: <150000 MMK, 150000 – 300000 MMK, 300001 – 450000 MMK, 450001 – 600000 MMK, > 600000 MMK. Most of the respondents were in the low income class (150000 – 300000) MMK, representing 62% of the total respondents. Very low income class (<150000 MMK) represented 15% of the total respondents and medium income class (300001 – 450000 MMK) represented 15% of total respondents. High income class (450001 – 600000 MMK) covered only 4% of total respondents and Very high income class (> 600000 MMK) was present in the respondents by 5%.

The saving status of the income of the respondents is shown in the table (4.3). Only 41% of the respondents could make saving of their monthly family income. It was strangely noticed that male villagers had habit of saving money more than the female villagers.

The saving amount of the family of the respondents is shown in the table (4.3). Among 123 respondents who can save some of their monthly family income, 70 respondents (57%) can save the money amount between 50000 MMK and 100000 MMK. Twenty seven respondents (22%) could save the amount less than 50000 MMK monthly and 14 respondents (11%) could save the amount between 100001 MMK and 200000 MMK. The respondents who could save large amount of their monthly family income, were 3% for 200001- 300000 MMK and 7% for more than

300000 MMK. It was found that females were more than males in small saving groups and males were more than females in large saving groups.

4.3.3 Result regarding knowledge about covid-19 vaccination

Table (4.4) Response to different questions regarding knowledge about covid-19 vaccination

No.	Questions for knowledge about the covid-19 vaccine	Mean	St.dev
1	Can covid-19 disease be prevented by vaccine?	1.893	0.443
2	Covid-19 vaccine is 50 % effective in preventing the disease.	1.413	0.867
3	Covid-19 vaccine is 70 % effective in preventing the disease.	1.163	0.852
4	Covid-19 vaccine is 90 % effective in preventing the disease.	1.137	0.693
5	Can you get COVID-19 disease from COVID-19 vaccine?	1.710	0.674
6	Can you get COVID-19 infection even after taking COVID-19 vaccine?	1.050	0.718
7	Can COVID-19 vaccine be given if you have a past history of COVID-19 infection?	1.390	0.887
8	Can COVID-19 vaccine be given while you have COVID-19 infection?	1.570	0.784
9	Can the COVID-19 vaccine be given to pregnant women?	0.777	0.806
10	Can the COVID-19 vaccine be given to breastfeeding women?	0.697	0.817
11	Can the COVID-19 vaccine also protect us from the Influenza virus?	0.647	0.893
12	Does the immune response from the COVID-19 vaccine go down over time?	1.247	0.934
13	Does a protective immunity against COVID-19 occur immediately after the first dose?	1.330	0.851

14	Is it true that the administration of the COVID-19 vaccine may cause mild side effects?	1.727	0.663
15	Covid-19 vaccination is free of charge in government vaccination programme?	1.923	0.371
16	Do you agree at least 70% of the villagers in your village need covid-19 vaccination to prevent transmission of covid-19 disease in your village?	1.393	0.489
	Overall score for knowledge about covid-19 vaccination	1.32	0.377

(Source : Survey Data,2024)

In the knowledge section of the study, participants' responses to each question are scored based on their level of awareness. If the participant provides the correct or most accurate information regarding the question, they are awarded 2 points. If the participant provides an incorrect answer or shows a misunderstanding of the question or concept, they are awarded 1 point. If the participant indicates that they are unaware or do not know the answer to the question, they are awarded 0 points. This scoring system is used to assess the level of knowledge about COVID-19 vaccines or any other relevant topics being studied. Higher scores indicate better awareness and understanding of the topic.

According to table (4.4), the overall mean score of 1.32 indicates that, on average, participants' knowledge of COVID-19 vaccines is slightly closer to a "wrong" answer (score of 1) rather than a "right" answer (score of 2). This suggests that the participants have limited knowledge or understanding of the topic. While some participants may have provided correct answers, a large portion provided incorrect or partially incorrect answers, resulting in a mean score that leans closer to 1.

The standard deviation of 0.337 reflects the amount of variation in the participants' knowledge scores. Since this is a relatively small standard deviation, it suggests that the participants' scores are fairly consistent around the mean of 1.32. In other words, there is not a large spread in the scores, and most participants' knowledge levels are somewhat similar, with few extreme variations (either very high or very low scores).

Table (4.5) Level of score for knowledge about covid-19 vaccination (n=300)

Knowledge level	Score range	Frequency	Percentage
Low	0 – 18	83	27.7%
Medium	19 – 24	114	38.0%
High	25 – 32	103	34.3%

(Source : Survey Data, 2024)

The levels of score for knowledge about covid-19 vaccination among the respondents are shown in the table (4.5). There are 16 questions used to assess the knowledge of the respondent about the covid-19 vaccination. The correct answer for each question was scored two, wrong answer was scored one and being negligent about the question matter was scored zero as mentioned above. The total score for the questions regarding the knowledge about the covid-19 vaccination for each respondent, was then calculated and the knowledge level of each of the respondent was classified. Out of 300 respondents, 114 respondents (38%) had medium level of knowledge about the covid-19 vaccination, 103 respondents (34.3%) had high level of knowledge about covid-19 vaccination and 83 respondents (26%) had low level of knowledge. Wonderfully, 4 respondents (1.3%) answered excellently and correctly to all the questions about the covid-19 vaccination and got full score of 32. The respondents that got the full knowledge score, were mostly government staffs and graduated persons.

Table (4.6) Knowledge about covid-19 vaccination according to family monthly income

Income level	Knowledge about covid-19 vaccination						Total	
	Low		Medium		High			
	Freq	%	Freq	%	Freq	%	Freq	%
<150000	21	7%	18	6%	5	2%	44	15%
150000-300000	41	14%	74	25%	70	23%	185	62%
300001-450000	9	3%	14	5%	22	7%	45	15%
450001-600000	3	1%	3	1%	5	2%	11	4%

>600000	4	1.3%	7	2.3%	4	1%	15	5%
All total	78	26%	116	39%	106	35%	300	100%

(Source : Survey Data, 2024)

The knowledge about the covid-19 according to the family income is shown in the table (4.6). Among 44 respondents with monthly family income <150000 MMK, most respondents had low to medium level of knowledge. Among 185 respondents with income 150000 – 300000 MMKs, most respondents had medium to high level of knowledge and wonderfully, 3 respondents (1%) achieved full score of knowledge. Among 45 respondents with income 300001 – 450000 MMKs, most respondents had high level of knowledge and few respondents had low level of knowledge. Among 11 respondents with income 450001 – 600000 MMKs, the percentages of respondents were similar across three groups of low, middle and high income groups. Among the respondents with income >600000 MMKs, persons with medium level of knowledge about covid-19 vaccination were relatively more common and 1 respondent (0.3%) achieved full score of knowledge. These findings were statistically significant with the chi-square value of 21.554 and had a p-value of 0.0058 at significance level of 0.05.

Table (4.7) Knowledge of the respondents about covid-19 vaccination according to their occupations

Occupation	Knowledge about covid-19 vaccination						Total	
	Low		Medium		High			
	Freq	%	Freq	%	Freq	%	Freq	%
Farming + livestock	1	0.3%	9	3%	3	1%	13	4.3%
Farming	5	1.7%	6	2%	7	2.3%	18	6%
Livestock	7	2.3%	3	1%	0	0%	10	3.3%
Government staff	1	0.3%	2	0.7%	14	4.7%	17	6%
Non-government staff	7	2.3%	24	8%	27	9%	58	19.3%
Private business	25	8.3%	30	10%	35	11.7%	90	30%
Manual labour	20	6.7%	23	7.7%	9	3%	52	17%
Dependent	17	5.7%	17	5.7%	8	2.7%	42	14%
All total	83	28%	114	38%	103	34.3%	300	100%

(Source : Survey Data, 2024)

The knowledge of the respondents about covid-19 vaccination according to their occupation is shown in the table (4.7). Among 13 respondents whose works were both farming and livestock breeding, most had medium level of knowledge. Among 18 respondents whose works were farming only, percentages of respondents were similar across three levels of knowledge. Among 10 respondents whose works were livestock breeding, most had low level of knowledge. Among 17 respondents who were government staffs, most had high level of knowledge. Among 58 respondents who were non-government staffs, most had medium to high level of knowledge. Among 90 respondents whose main occupation was private business, percentages were similar across three levels of knowledge. Among 52 respondents who did manual labour, most had low to medium level of knowledge. Among 42 respondents who were dependent, most had low to medium level of knowledge. On looking overall, government staffs had high level of knowledge about covid-19 vaccination, livestock breeders had low level of knowledge, manual laborers and dependent persons had low to medium level of knowledge and non-government staffs also had relatively high level of knowledge. This finding was also statistically significant with chi-square value of 54.7805 and has a p-value of < 0.00001 at significance level of 0.05.

Table (4.8) Knowledge of the respondents about covid-19 vaccination according to types of livelihoods

Livelihoods	Knowledge about covid-19 vaccination						Total	
	Low		Medium		High			
	Freq	%	Freq	%	Freq	%	Freq	%
Farm works	13	4%	18	6%	10	3%	41	14%
Non-farm works	70	23%	96	32%	93	31%	259	86%
All total	83	28%	114	38%	103	34%	300	100%

(Source : Survey Data, 2024)

The knowledge of the respondents about covid-19 vaccination according to their livelihoods is shown in the table (4.8). Among 41 households which did farm works, most households had medium level of knowledge about covid-19 vaccination. About one-fourth of the households who did farm works had high level of knowledge

and about one-third had low level of knowledge. Among 259 households which did non-farm works, most households had medium to high level of knowledge about covid-19 vaccination and over one-fourth of the households had low level of knowledge. This finding was statistically significant with chi-square value of 8.953 and had a p-value of 0.011 at significance level of 0.05.

4.3.4 Result regarding attitude towards covid-19 vaccination and its effect on the livelihoods

Table (4.9) Response to different questions regarding general attitude on covid-19 vaccination

No.	Questions for general attitude on the covid-19 vaccination	Mean	St.dev
1	Do you think covid-19 vaccination is still necessary nowadays?	1.43	0.868
2	Do you think covid-19 vaccination is beneficial for health of the people?	1.95	0.307
3	Do you think all of the villagers in your village need covid-19 vaccination?	1.76	0.619
4	People should only use methods other than vaccination to protect covid-19 infection effectively?	1.86	0.438
	Overall score for general attitude on covid-19 vaccination	1.75	0.399

(Source : Survey Data, 2024)

This study applies 3-point Likert scale to measure the level of agreement with given statements on attitudes toward a specific issue. The scoring system allows respondents to express their level of disagreement, neutrality, or agreement. Disagree option is chosen when the respondent does not agree with the statement at all. Neutral option is selected when the respondent neither agrees nor disagrees with the statement, indicating ambivalence or indifference. Agree option is chosen when the respondent agrees with the statement and has a positive attitude toward the issue being addressed. This type of Likert scale is useful for gaining insights into respondents' attitudes, with scores that can be averaged to represent the overall tendency of the group.

According to table (4.9), an overall mean score of 1.75 is closer to 2 ("Agree"), which suggests that participants, on average, have a positive attitude or tend to agree with the statements related to the topic (in this case, likely attitudes toward COVID-19 vaccines or vaccination awareness). Since the mean score is not exactly 2, it indicates that while the majority of participants hold positive attitudes, there may still be some participants who are either neutral or slightly less certain in their agreement. A small portion of the population might hold neutral views, but overall, the attitude leans toward agreement.

Table (4.10) Response to different questions regarding attitude of people on the covid-19 vaccination regarding their livelihoods

No.	Questions for attitude of people on the covid-19 vaccination regarding their livelihoods	Mean	St.dev
1	Do you think covid-19 vaccination protected your business or loss of work or absence in work during pandemic? (if respondent's occupation status is dependent, works refers to house chores)	1.427	0.868
2	Do you think covid-19 vaccination protected your health during covid-19 pandemic?	1.813	0.575
3	Do you think covid-19 vaccination protected your family members' health during covid-19 pandemic?	1.753	0.653
4	Do you think covid-19 vaccination prevented high costs of treatment due to covid-19 disease during covid-19 pandemic?	1.813	0.574
5	Do you think covid-19 vaccination prevented the delay in opening of school during the covid-19 pandemic?	1.580	0.800
6	Do you think covid-19 vaccination is beneficial for the education of the children?	1.650	0.759
7	Do you think covid-19 vaccination is beneficial for the health care of the villagers?	1.903	0.429
8	Do you think covid-19 vaccination increases the monthly income of the villagers?	1.477	0.772
9	Do you think covid-19 vaccination facilitated the allowance of the government for social gathering and ceremonial celebration in your village?	1.890	0.449

10	Do you think covid-19 vaccination facilitates reopening of market and buying of grocery during the later days of the pandemic?	1.890	0.449
11	Do you think covid-19 vaccination is beneficial for the livelihood of the people?	1.807	0.585
	Overall Mean	1.728	0.416

(Source : Survey Data, 2024)

Responses to different questions regarding attitude of people on the covid-19 vaccination regarding their livelihoods are shown in the table (4.10). The overall mean score of 1.728 on a 3-point Likert scale indicates that, on average, respondents lean toward agreement with the statements regarding the impact of COVID-19 vaccination on their livelihood activities. This suggests that most people in the survey have a positive attitude towards the COVID-19 vaccination and perceive it as beneficial to their livelihood in some way. A score closer to 2 suggests that respondents generally agree with the statements, indicating a positive attitude. The mean of 1.75 reflects that a majority are more likely to agree than remain neutral, but not with unanimous strong agreement.

The standard deviation of 0.416 indicates that there is slight variability in the responses. While most people generally lean toward agreement, there is some variation in attitudes. Some respondents may have neutral or differing views regarding the impact of vaccination on their livelihoods, though this is not extreme given the relatively low standard deviation.

Table (4.11) Level of score for general attitude on covid-19 vaccination (n=300)

General attitude	Score range	Frequency	Percentage
Negative	0 – 4	37	12%
Neutral	5 – 6	57	19%
Positive	7 – 8	206	69%

(Source : Survey Data, 2024)

The level of score for general attitude on covid-19 vaccination is shown in the table (4.11). There are four questions used to assess the general attitude on the covid-

19 vaccination. The positive attitude for each question was scored two, negative attitude was scored one and the neutral attitude was scored zero. The total score for the general attitude on covid-19 vaccination for each respondent, was calculated then and the nature of general attitude on covid-19 vaccination was classified. The levels of score were classified into negative attitude if the respondent's score was less than 60% of the maximal score (score 0 to 4), into neutral attitude if the respondent's score was between 60% and 79% of the maximal score (score 5 to 6) and into positive attitude if the respondent's score was equal to or more than 80% of the maximal score (score 7 to 8), by using Gloom's cut-off point. Among the total respondents 300, 206 respondents (69%) had positive general attitude towards covid-19 vaccination, 37 respondents (19%) had neutral attitude and 37 respondents (12%) had negative general attitude towards covid-19 vaccination.

Table (4.12) Level of score for attitude on covid-19 vaccination regarding their livelihoods (n=300)

General attitude	Score range	Frequency	Percentage
Negative	0 – 13	31	10%
Neutral	14 – 17	31	10%
Positive	18 – 22	238	79%

(Source : Survey Data, 2024)

The levels of score for attitude on covid-19 vaccination regarding their livelihoods, are shown in the table (4.12). There are eleven questions used to assess the attitude of the respondents on the covid-19 vaccination in relation to their livelihood activities. The positive attitude for each question was scored two, negative attitude was scored one and the neutral attitude was scored zero. The total score for the attitude on covid-19 vaccination regarding their livelihood for each respondent, was calculated then and the nature of attitude on covid-19 vaccination regarding their livelihoods, was classified. The levels of score were classified into negative attitude if the respondent's score was less than 60% of the maximal score (score 0 to 13), into neutral attitude if the respondent's score was between 60% and 79% of the maximal score (score 14 to 17) and into positive attitude if the respondent's score was equal to or more than 80% of the maximal score (score 18 to 22), by using Gloom's cut-off

point. Among the total respondents 300, 238 respondents (79%) had positive attitude towards covid-19 vaccination regarding their livelihoods, 31 respondents (10%) had neutral attitude and 31 respondents (10%) had negative attitude towards covid-19 vaccination regarding their livelihoods.

Table (4.13) Attitude of people towards covid-19 vaccination regarding their livelihoods, according to family monthly income

Family monthly income level	Attitude of people towards covid-19 vaccination regarding their livelihoods						Total	
	Negative		Neutral		Positive			
	Freq	%	Freq	%	Freq	%	Freq	%
<150000	15	5%	6	2%	23	8%	44	15%
150000-300000	15	5%	18	6%	152	51%	185	62%
300001-450000	0	0%	4	1%	41	14%	45	15%
450001-600000	0	0%	2	1%	9	3%	11	4%
>600000	1	0.3%	1	0.3%	13	4%	15	5%
All total	31	10%	31	10%	238	79%	300	100%

(Source : Survey Data, 2024)

Attitude of people towards covid-19 vaccination regarding their livelihoods according to family monthly income, among the respondents are shown in the table (4.13). Among 44 respondents with family monthly income less than 150000 MMKs, 23 respondents (8%) had positive attitude towards the covid-19 vaccination in relation to their livelihood activities, 6 respondents (2%) had neutral attitude and 15 respondents (5%) had negative attitude. Among 185 respondents with family monthly income (150000 – 300000) MMKs, 152 respondents (51%) had positive attitude towards the covid-19 vaccination in relation to their livelihood activities, 18 respondents (6%) had neutral attitude and 15 respondents (5%) had negative attitude. Among 45 respondents with family monthly income (300001 – 450000) MMKs, 41 respondents (14%) had positive attitude towards the covid-19 vaccination in relation to their livelihood activities, 4 respondents (1%) had neutral attitude but no respondent and negative attitude. Among 11 respondents with family monthly income (450001 – 600000) MMKs, 9 respondents (3%) had positive attitude, 2 respondents

(1%) had neutral, but no respondent had negative attitude. Among 15 respondents with family monthly income (>600000 MMKs), 13 respondents (4%) had positive attitude towards covid-19 vaccination regarding their livelihoods, one respondent (0.3%) had neutral attitude and one respondent had negative attitude. These findings were statistically significant with the chi-square value of 37.518 and had a p-value of less than 0.00001 at significance level of 0.05.

Table (4.14) Attitude of the respondents towards covid-19 vaccination regarding their livelihoods, according to types of livelihoods

Livelihoods	Attitude of people towards covid-19 vaccination regarding their livelihoods						Total	
	Negative		Neutral		Positive			
	Freq	%	Freq	%	Freq	%	Freq	%
Farm works	1	0.3%	2	0.7%	38	12.6%	41	14%
Non-farm works	30	10%	29	9.7%	200	66.7%	259	86%
All total	31	10.3%	31	10.4%	238	79.3%	300	100%

(Source : Survey Data, 2024)

Attitude of the respondents towards covid-19 vaccination regarding their livelihoods, according to the types of livelihoods, is given in the table (4.14). Among 41 respondents whose households mainly did farm works as their livelihoods, 38 respondents had positive attitude towards covid-19 vaccination in relation to their livelihood activities, 2 respondents had neutral attitude and only one respondent had negative attitude. Among 259 respondents whose households mainly did non-farm works as their livelihoods, 200 respondents had positive attitude towards covid-19 vaccination in relation to their livelihood activities, 29 respondents had neutral attitude and 30 respondents had negative attitude. On looking overall, most respondents whose households' livelihoods were either farm works or non-farm works, had positive attitude towards covid-19 vaccination, regarding their livelihoods. Unfortunately, this finding was not statistically significant with chi-square value of 5.2986 and the p-value was 0.0707 (> 0.05) at significance level of 0.05.

4.3.5. Result regarding practice of covid-19 vaccination

Table (4.15) Response to questions regarding practice of covid-19 vaccination

No.	Item	Particular	Number	Percent (%)
1	Have you done covid-19 vaccination?	Yes	282	94
		No	18	6
2	If Yes in above Q1, how many times did you receive covid-19 vaccination?	One	10	4
		Two	99	35
		Three	122	43
		Four	40	14
		Over four	11	4
3	Where did you receive covid-19 vaccination?	Health sub-centre	3	1.06
		Rural health center	135	47.87
		Station hospital	12	4.26
		Township hospital	19	6.74
		Gathering place	130	46.1
		Private clinic	1	0.35
4	If possible, can you tell me the name of covid-19 vaccine?	Covid shield	30	10
		Sinopharm	67	22
		Sinovac	21	7
		Myancopharm	24	8
		Sputnik	2	1
		Don't know the name	164	55
5	Do you have any plan to vaccinate further booster dose of covid vaccine?	Yes	203	68
		No	35	12
		I don't know	62	21
6	Will you recommend other to receive covid-19 vaccine if you found someone in your village who haven't vaccinated completely or vaccinated partially?	Yes	287	96
		No	13	4

(Source : Survey Data, 2024)

The responses to questions regarding the practice of covid-19 vaccination among the respondents are shown in the table (4.15). Regarding the question “Have you done covid-19 vaccination?”, 282 respondents (94%) answered “Yes” and 18 respondents (6%) answered “No”. The correct for answer for this question is “Yes”. (Kaiser Permanente, 2024). Regarding the question “if Yes in above question , how many times did you receive covid-19 vaccination?”, 122 respondents (43%) answered three times, 99 respondents (35%) answered two times, 40 respondents (14%) answered four times, 11 respondents (4%) answered more than four and 10 respondents (4%) answered one time. The correct answer for this question is three times and above. (Health, 2020). Regarding the question “Where did you receive covid-19 vaccination?”, 135 respondents (47.87%) answered at rural health center, 130 respondents (46.1%) answered at gathering place like monastery, school, 19 respondents (6.74%) answered at township hospital, 12 respondents (4.26%) answered at station hospital, 3 respondents (1.06%) answered at health sub-center and 1 respondent (0.35%) answered at private clinic. This question does not have the correct answer and it only collects the data about the site of covid-19 vaccination. Regarding the question “If possible, can you tell me the name of covid-19 vaccine?”, 164 respondents (55%) did not know the name, 67 respondents (22%) answered sinopharm, 30 respondents (10%) answered covishield, 24 respondents (8%) answered Myancopharm, 21 respondents (7%) answered sinovac and 2 respondent (1%) answered sputnik. The correct answer for this question is that the respondent must remember any one of the covid-19 vaccines that she or he had received and the answer “did not know the name” is the wrong answer. Regarding the question “Do you have any plan to vaccinate further booster dose of covid vaccine?”, 203 respondents (68%) answered “Yes”, 35 respondents (12%) answered “No” and 62 respondents (21%) answered “I don’t know”. The correct answer for this question is “Yes” (Health, 2020) and two other answers are wrong. Regarding the question “Will you recommend other to receive covid-19 vaccine if you found someone in your village who haven’t vaccinated completely or vaccinated partially?”, 287 respondents (96%) answered “Yes” and 13 respondents (4%) answered “No”. The correct answer for this question is “Yes”. (Centers for Disease Control and Prevention, 2022)

Table (4.16) Level of score for practice of covid-19 vaccination (n=300)

Practice	Score range	Frequency	Percentage
Good	4 – 5	206	69%
Moderate	3	57	19%
Bad	1 – 2	37	12%

(Source : Survey Data, 2024)

The levels of score for practice of covid-19 vaccination among the respondents were shown in the table (4.16). Out of the 6 questions included in the practice related to covid-19 vaccine section, five questions were used for score calculation and one question was used for just data collection. Correct answer for each question was scored one, the wrong answer was scored zero and the total score for the five questions related to practice were calculated to classify the nature of practice. The levels of score were classified into bad practice if the respondent's score was less than 60% of the maximal score (between 1 and 2), into moderate practice if the respondent's score was between 60% and 79% of the maximal score (if score = 3) and into good practice if the respondent's score was equal to or more than 80% of the maximal score (between 4 and 5), by using Gloom's cut-off point.

Among the total respondents 300, 206 respondents (69%) had good practice regarding covid-19 vaccination. 57 respondents (19%) had moderate level of practice and 37 respondents (12%) had bad level of practice.

Table (4.17) Practice of covid-19 vaccination according to family monthly income (n=300)

Family monthly income level	Practice of covid-19 vaccination						Total	
	Bad		Moderate		Good			
	Freq	%	Freq	%	Freq	%	Freq	%
<150000	19	6	15	5	10	3	44	15
150000-300000	32	11	44	15	109	36	185	62
300001-450000	6	2	7	2	32	11	45	15
450001-600000	2	0.7%	1	0.3%	8	3%	11	4%
>600000	2	0.7%	1	0.3%	12	4.0%	15	5%
All total	61	20%	68	23%	171	57%	300	100%

(Source : Survey Data, 2024)

The practice of covid-19 vaccination according to family monthly income among the respondents, is shown in the table (4.17). Among 44 respondents with family monthly income less than 150000 MMKs, 10 respondents (3%) had good practice regarding the covid-19 vaccination, 15 respondents (5%) had moderate practice and 19 respondents (6%) had bad practice. Among 185 respondents with family monthly income (150000 – 300000) MMKs, 109 respondents (36%) had good practice regarding the covid-19 vaccination, 44 respondents (15%) had neutral attitude and 32 respondents (11%) had negative attitude. Among 45 respondents with family monthly income (300001 – 450000) MMKs, 32 respondents (11%) had good practice regarding the covid-19 vaccination, 7 respondents (2%) had moderate practice and 6 respondents (2%) had bad practice. Among 11 respondents with family monthly income (450001 – 600000) MMKs, 8 respondents (3%) had good practice regarding covid-19 vaccination, 1 respondents (0.3%) had moderate practice and 2 respondent (0.7%) had bad practice. Among 15 respondents with family monthly income (>600000 MMKs), 12 respondents (4%) had good practice regarding covid-19 vaccination, one respondent (0.3%) had moderate practice and another one respondent (0.3%) had bad practice. These findings were statistically significant with a chi-square value of 32.46 and had a p-value of 0.000077 at significance level of 0.05.

Table (4.18) Practice of covid-19 vaccination, according to types of livelihoods (n=300)

Livelihoods	Practice of covid-19 vaccination						Total	
	Bad		Moderate		Good			
	Freq	%	Freq		Freq	%	Freq	%
Farm works	8	2.7%	9	3	24	8%	41	14%
Non-farm works	53	18%	59	19.7%	147	49%	259	86%
All total	61	20.3	68	22.7	71	57	300	100

(Source : Survey Data)

The practice of covid-19 vaccination according to types of livelihoods among the respondents, is given in the table (4.18). Among the respondents whose households' livelihoods were farm works, 24 respondents (8%) had good practice of covid-19 vaccination, 9 respondents (3%) had moderate practice and 8 respondents (2.7%) had bad practice. Among the respondents whose households' livelihoods were non-farm works, 147 respondents (49%) had good practice of covid-19 vaccination, 59 respondents (19.7%) had moderate practice and 53 respondents (18%) had bad practice. When looking overview, most respondents had good practice of covid-19 vaccination in both farm livelihoods group and non-farm livelihoods group. But, unfortunately, this finding was obviously not statistically significant because it has a p-value of 0.9772 with chi-square value of 0.0461 at significance level of 0.05.

CHAPTER V

CONCLUSION

5.1 Findings

Regarding knowledge about covid-19 vaccination, although most respondents knew that covid-19 disease is preventable by vaccine, most of them had wrong knowledge about the efficacy of the vaccine and only half of the respondents knew the efficacy of the vaccine correctly. Most of the respondents had wrong knowledge that they could not be infected with covid-19 after they got vaccinated and only about one-third of the respondents knew that fact correctly. Most respondents knew that they could be vaccinated if they had past history of covid-19 infection. They also knew well that they could not be vaccinated against covid-19 while they had covid-19 infection. But most of the respondents did not know well about the covid-19 vaccination regarding pregnancy and breastfeeding. Most respondents also did not know well that covid-19 vaccine could not prevent influenza viral infection. Most respondents knew correctly that immunity conferred by covid-19 vaccine faded after a considerable period of time (which was about one year) and immunity against covid-19 did not appear immediately after vaccination. Most respondents were also aware that covid-19 vaccines were not without side effects. Most importantly, most respondents knew that covid-19 vaccination was FOC in government mass vaccination programme. Regarding the fact that at least 70% of the village population needed to be vaccinated against covid-19 to protect all the villagers, about half of the respondents knew about it correctly. Overall, the respondents had a mean score of 1.32 with standard deviation of 0.337 in knowledge score for covid-19 vaccination. So, most respondents had limited knowledge about the facts included in the questionnaire related to covid-19 vaccination and the difference between the level of knowledge between the respondents were not so vast.

When correlating the income level of the respondents with their knowledge level, most of the respondents with the very low income, had low level of knowledge and most respondents in the low and medium income level, had medium and high level of knowledge. Although most respondents in the high and very high level of income had medium to high level of knowledge, surprisingly they also had low level of knowledge despite their high income. It could be because of low level of education

despite good business skill and these findings were statistically significant. So, income level of the respondents could be said not directly proportional to the knowledge of the respondents regarding covid-19 vaccination. When correlating the occupations of the respondents with their knowledge level about covid-19 vaccination, respondents whose occupations were both farming and livestock breeding, had mainly medium level of knowledge, non-government staffs had medium to high level of knowledge, dependent respondents and manual labourers had low to medium level of knowledge and there was no obvious difference across three levels of knowledge in private business groups and farming groups. Most of the respondents whose occupation was livestock breeding, had low level of knowledge while most of the government staffs had high level of knowledge. When correlating the types of livelihoods of the respondents with the knowledge about covid-19 vaccination, farm work households mostly had medium level of knowledge while non-farm work households mostly had medium to high level of knowledge.

Regarding attitude towards covid-19 vaccination, most respondents generally had positive attitude towards covid-19 vaccination. They also had positive attitude towards covid-19 vaccination regarding their livelihoods. When correlating the attitudes of people towards covid-19 vaccination regarding their livelihoods to their income levels, most respondents had positive attitude towards covid-19 vaccination in all income levels. But, interestingly, negative attitudes were found in some respondents in low and very low income groups. This finding was statistically significant with the chi-square value of 8.226 and had a p-value of 0.0164 at significance level of 0.05. When trying to correlate the attitudes of the respondents towards covid-19 vaccination regarding their livelihoods, there was no statistically significant relationship between the types of livelihoods and the nature of attitudes.

Regarding practice of covid-19 vaccination, most of the respondents had good practice on covid-19 vaccination. But, it was found that most respondents who had vaccinated against covid-19, could not know or remember which type of covid-19 vaccine had been administered to them. This was the main weakness in the practice of covid-19 vaccination. Also, twelve percent of the total respondents had bad practice of covid-19 vaccination and they were mostly poorly educated people. When correlating the practice of covid-19 vaccination of the respondents to their income level, respondents with bad practices were common in the very low income groups.

Most respondents with income level (150000 – 300000 MMKs), had good practice because this income group contained many people with good education (high school and graduates). In the respondents with medium income level and above, good practice persons were more common relatively and bad practice was less commonly found in these groups of respondents. Thus, income level could be said to be positively correlated with the good practice of covid-19 vaccination and this finding was statistically significant.

When trying to correlate the types of the livelihoods of the respondents to the nature of practice, obviously there was no statistically significant relationship between these two factors. Interestingly, it was also noted that some respondents who got vaccinated against covid-19 three times and more, could not remember the types of covid-19 vaccine that they had received.

On correlation of KAP of the respondents with the income level, knowledge level was not directly proportional to the income level but attitude and practice levels were directly proportional to the income levels. Once again, on correlation of the types of livelihoods of the respondents to their KAP, non-farm works were more associated with high level of knowledge about covid-19 vaccination while farm works were more associated with medium level of knowledge. There was no statistically significant association between types of the livelihoods and the attitude and practice of covid-19 vaccination but both farm and non-farm groups mostly included respondents with positive attitude and good practice and this could be due to good level of knowledge about covid-19 disease and its vaccine which, in turn, could be due to results of government health education programs.

5.2 Suggestions

As covid-19 disease has not been eradicated from the world and is still present among the human as a low, smoldering but less pathogenic form at the present times, there is definitely the risk of re-emergence of new, mutated and highly virulent SARS-CoV virus in the upcoming years and the risk of re-arising of covid-19 pandemic in the world. To prevent this, covid-19 vaccination process needs to be continued until covid-19 vaccines with long-lasting immunity arise in the world and we can make much detail understanding of the SARS-CoV2 virus, its pathogenesis and its sequelae. Now the covid-19 vaccines are one of the integral parts of universal

immunization programs all over the world and people may need booster doses of covid-19 vaccines within six to twelve months of full immunization to update their immunity against new and newer strains of covid-19 viruses.

On looking back into history, many terrible infectious diseases like Spanish Flu, small poxes killed and damaged the lives of many people but were eventually controlled by herd immunity. (Amenabar, 2020; Who.int, 2023) In spanish flu, herd immunity was created through infection and transmission of flu among people naturally and, in small poxes, through mass vaccination. Even nowadays, covid-19 cases were sporadically found in tens of thousands all over the world. (WHO, 2024). So covid-19 vaccination will still be needed to prevent re-emergence of covid-19 outbreak again and to prevent economic and social loss caused by covid-19 pandemic again.

In this study, family monthly income had directly proportional relationship with the good knowledge, attitude and practice level of covid-19 vaccination and people with good KAP will receive covid-19 vaccination eagerly and willingly which, in turn, will increase the vaccine coverage of covid-19 infection in the upcoming years. As covid-19 pandemic caused serious damages in economy, social activities, education, health and many infrastructural management, covid-19 vaccination will definitely prevent the re-emergence of such disastrous damage in livelihoods of people by constantly creating the herd immunity necessary enough to prevent enormous covid disease transmission as in pandemic period. Another thing is that increased economic activities and thus increased income level will lead to better KAP of the people regarding covid-19 vaccination. So, survey to assess the KAP of people regarding covid-19 vaccination is something almost every country in the world should carry out on a yearly basis to increase the vaccine coverage for covid-19 vaccine maximally until the covid-19 vaccines with long-lasting immunity became available in the world. One more point that should be recommended according to this study is that government health education programs should be carried out effectively and continually to increase the awareness about covid-19 vaccination and other preventive measures against covid-19 infection.

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Suggested Website for Related Study

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APPENDIX

Questionnaires for assessment of KAP of people on covid-19 vaccination

Name of respondent

Name of village

Date of data collection

1. Demographic and socio-economic factors

Age - years

Gender - M / F

Race - 1. Kachin 2. Kayar 3. Kayin 4. Chin
5. Burmese 6. Mon 7. Rakhine 8. Shan
9. Other

Religion - 1. Buddhist 2. Christian 3. Hinduism 4. Islam
5. Other

Marital status - 1. Married 2. Single 3. Other

(Other includes divorced, separated, widowed)

Any children (under 18 year of age)? (If the marital status of respondent is married or other)

1. Yes 2. No

If Yes, the number of children is -----.

Household size - 1. < 3 members 2. 3-5 members
3. 6-8 members 4. > 8 members

Education level - 1. Primary school 2. Middle school
3. High school 4. Bachelor degree 5. Illiterate

2. Questions regarding livelihood

Main occupation of household - 1. Farming + Livestock 2. Farming
3. Livestock
(farm works)
4. Government staff 5. Non-governmental staff
6. Private business 7. Manual laborer
8. Dependent
(non-farm works)

Family Monthly Income level - 1. < 150000 MMK 2. 150000 to 300000 MMK
3. 300001 to 450000 MMK
4. 450001 to 600000 MMK
5. >600000 MMK

Saving - Can you make saving ?
1. Yes 2. No

If yes, how much can you save every month, on average?

1. < 50000 kyats 2. 50000 to 100000 kyats 3. 100001 to 200000 kyats
4. 200001 to 300000 kyats 5. >300000 kyats

If the respondent is a farmer, then proceed to the following questions:

2.1. Questions regarding Farming

Q1. How many years of experience do you have in farming?

1. < 10 years 2. 10 to < 20 years 3. 20 to 30 years 4. > 30 years

Q2. What kind of farming system do you practice?

1. Shifting cultivation 2. Low land 3. Terrace
4. Other

Q3. How many acres do you have?

1. < 5 acres 2. 5 to 10 acres 3. > 10 acres

If the respondent is a livestock breeder, then proceed to the following questions:

2.2. Questions regarding livestock

Q1. What kind of animals do you breed?

1. Chicken 2. Duck 3. cows 4. buffalo
5. Fish 6. Pigs 7. goat

Q2. How many animals are you breeding now?

1. <10 2. 11-30 3. 31-50 4. 51-100
5. 101-200 6. 201-500 7. 501-1000 8. >1000

**** If the respondent was working with both farming and livestock, ask the questions related to farming and livestock.*

3. Knowledge about covid-19 vaccine

Q1. Can covid-19 disease be prevented by vaccine?

- 1.Yes 2.No 3.I don't know

Q2. Covid-19 vaccine is 50 % effective in preventing the disease.

- 1.Yes 2.No 3.I don't know

Q3. Covid-19 vaccine is 70 % effective in preventing the disease.

- 1.Yes 2.No 3.I don't know

Q4. Covid-19 vaccine is 90 % effective in preventing the disease.

- 1.Yes 2.No 3.I don't know

Q5. Can you get COVID-19 disease from COVID-19 vaccine?

- 1.Yes 2.No 3.I don't know

- Q6. Can you get COVID-19 infection even after taking COVID-19 vaccine?
1.Yes 2.No 3.I don't know
- Q7. Can COVID-19 vaccine be given if you have a past history of COVID-19 infection?
1.Yes 2.No 3.I don't know
- Q8. Can COVID-19 vaccine be given while you have COVID-19 infection?
1.Yes 2.No 3.I don't know
- Q9. Can the COVID-19 vaccine be given to pregnant women?
1.Yes 2.No 3.I don't know
- Q10. Can the COVID-19 vaccine be given to breastfeeding women?
1.Yes 2.No 3.I don't know
- Q11. Can the COVID-19 vaccine also protect us from the Influenza virus?
1.Yes 2.No 3.I don't know
- Q12. Does the immune response from the COVID-19 vaccine go down over time?
1.Yes 2.No 3.I don't know
- Q13. Does a protective immunity against COVID-19 occur immediately after the first dose?
1.Yes 2.No 3.I don't know
- Q14. Is it true that the administration of the COVID-19 vaccine may cause mild side effects?
1.Yes 2.No 3.I don't know
- Q15. Covid-19 vaccination is free of charge in government vaccination programme?
1.Yes 2.No 3.I don't know
- Q16. Do you agree at least 70% of the villagers in your village need covid-19 vaccination to prevent transmission of covid-19 disease in your village?
1.Yes 2.No 3.I don't know

4. Attitude of people on covid-19 vaccination

4.1. General attitude of people on covid-19 vaccination

Q1. Do you think covid-19 vaccination is still necessary nowadays?

1. Agree 2. Disagree 3. Neutral

Q2. Do you think covid-19 vaccination is beneficial for health of the people?

1. Agree 2. Disagree 3. Neutral

Q3. Do you think all of the villagers in your village need covid-19 vaccination?

1. Agree 2. Disagree 3. Neutral

Q4. People should only use methods other than vaccination to protect covid-19 infection effectively?

1. Agree 2. Disagree 3. Neutral

4.2. Attitude of people on covid-19 vaccination regarding their livelihood

Q1. Do you think covid-19 vaccination protected your business or loss of work or absence in work during pandemic? (if respondent's occupation status is dependent, works refers to house chores)

1. Agree 2. Disagree 3. Neutral

Q2. Do you think covid-19 vaccination protected your health during covid-19 pandemic?

1. Agree 2. Disagree 3. Neutral

Q3. Do you think covid-19 vaccination protected your family members's health during covid-19 pandemic?

1. Agree 2. Disagree 3. Neutral

Q4. Do you think covid-19 vaccination prevented high costs of treatment due to covid-19 disease during covid-19 pandemic?

1. Agree 2. Disagree 3. Neutral

Q5. Do you think covid-19 vaccination prevented the delay in opening of school during the covid-19 pandemic?

1. Agree 2. Disagree 3. Neutral

Q6. Do you think covid-19 vaccination is beneficial for the education of the children?

1. Agree 2. Disagree 3. Neutral

Q7. Do you think covid-19 vaccination is beneficial for the health care of the villagers?

1. Agree 2. Disagree 3. Neutral

Q8. Do you think covid-19 vaccination increases the monthly income of the villagers?

1. Agree 2. Disagree 3. Neutral

Q9. Do you think covid-19 vaccination facilitated the allowance of the government for social gathering and ceremonial celebration in your village?

1. Agree 2. Disagree 3. Neutral

Q10. Do you think covid-19 vaccination facilitates reopening of market and buying of grocery during the later days of the pandemic?

1. Agree 2. Disagree 3. Neutral

Q11. Do you think covid-19 vaccination is beneficial for the livelihood of the people?

1. Agree 2. Disagree 3. Neutral

5. Practice of covid-19 vaccination

Q1. Have you done covid-19 vaccination?

1. Yes 2. No

Q2. if Yes in above Q , how many times did you receive covid-19 vaccination?

1. one 2. two 3. three 4. four
5. more than four

Q3. Where did you receive covid-19 vaccination?

(1) health sub-center (2) rural health center (3) station hospital
(4) township hospital (5) gathering place (6) private clinic

Q4. If possible, can you tell me the name of covid-19 vaccine?

1. covidshield 2. Sinopharm 3. Sinovac
4. Myancopharm 5. Sputnik 6. Don't know the name

Q5. Do you have any plan to vaccinate further booster dose of covid vaccine?

1.Yes

2.No

3.I don't know

Q6. Will you recommend other to receive covid-19 vaccine if you found someone in your village who haven't vaccinated completely or vaccinated partially?

1.Yes

2.No

Name of the interviewer : _____

Signature of the interviewer : _____