

جامعة ميدأوشن



كلية الإدارة

قسم / تخصص إدارة صحية

دراسة دور العاملين في مجال الرعاية الصحية في إدارة الأمراض المزمنة بين الحجاج أثناء

الحج والعمرة: دراسة مقطعية

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العام الدراسي:

2025



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**Examining the Role of Healthcare Professionals in Managing Chronic Diseases Among Pilgrims During Hajj
and Umrah: A Cross-Sectional Study**

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Academic Year:

2025

ACKNOWLEDGMENT

The author wishes to sincerely thank all the individuals who have contributed to the outcome of this study. In particular, special gratitude goes to the healthcare professionals who willingly shared their knowledge and experiences that formed the basis of this research.

Deepest gratitude is expressed to the supervisors, Dr. Al-Faisal Abdul Hamid , Dr. Faiz grad , for their invaluable guidance, support, and encouragement throughout the entire process. Due to their expertise and constructive criticism, this study was shaped.

Thanks are further extended to all friends, colleagues, and family-related individuals who supported and helped throughout this period of research.

I thank you all for standing by me with your commitment at all times.



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Chapter one: Introduction

❖ Introduction

Millions of Muslims from around the globe travel to Mecca and Madinah, Saudi Arabia, to undertake Hajj on specific days in the final month of the Islamic calendar (Aljohani et al., 2022). In contrast, Umrah may be undertaken at any time of the year, and thousands of pilgrims travel to these holy cities (Aljohani et al., 2022). This mass gathering presents severe public health issues, particularly regarding infection control, since this huge number of pilgrims converging at a small geographical space during Hajj provides a platform for the spread of infection. These pilgrims are of an older age group and present with underlying medical disorders that require personalized medical care and pharmaceutical care (Mushi et al., 2021).

This pilgrim movement poses serious threats to health systems in providing timely, complete, and culturally appropriate medical treatment. With short stays and fast movement of the pilgrims, it is becoming increasingly difficult to manage chronic diseases like diabetes, hypertension, cardiovascular diseases, and respiratory diseases in such an environment. Health-care delivery during the Umrah and Hajj period would require concerted efforts on the part of caregiver activities to treat acute and chronic medical conditions, prevent the onset of complications, and ensure the safety and well-being of all pilgrims. Worthy of evaluating is the contribution of caregivers towards treating these conditions for the best health outcomes and subsequently enhanced experience during the pilgrimage. (Almutairi, et al 2018).

There have been documented cases of some infectious diseases during Hajj such as respiratory tract infections like seasonal influenza, meningococcal disease, lower respiratory infections, and tuberculosis, as well as hepatitis A, B, and C (Goni et al., 2020). Among these, upper respiratory tract infections (URTIs) are the most common affliction of the pilgrims (Yezli et al., 2021). The principal

bacterial pathogens have been considered to be *Haemophilus influenza* and *Staphylococcus aureus*, while it has been proved that human rhinoviruses cause most viral respiratory infections in infected pilgrims. (Bokhary et al., 2020). The influenza is usually caused by various strains each year, which significantly impacts pilgrims. Also, the mass gathering setup of Hajj facilitates the spread of food- and water-borne diseases with gastroenteritis and diarrhea among the visitors being prevalent (Yezli et al., 2021).

These outbreaks serve to emphasize the need for enhanced disease surveillance, immunization, and pilgrim health education. Thus, aggressive monitoring by health workers will allow for early diagnosis, prompt treatment, and implementation of preventive measures to curb further spread of the infectious agent. Their professional competence are crucial in controlling outbreaks, counseling pilgrims appropriately in hygiene, and delivering vaccination programs—such as meningococcal immunization—incorrectly given prior to pilgrimage. Development of the capability of healthcare workers to manage both infectious and non-infectious health conditions is at the center of the safeguarding of pilgrims' health as well as the mitigation of the public health impacts of mass gatherings. (Al-Tawfiq, Gautret & Memish 2017).

Due to high bacterial and viral infection risks of Hajj, maximum pharmaceutical services are indicated on all levels but particularly in medical facilities where the pilgrims could receive the same conveniently. It is an essential role that the healthcare professionals have during pilgrimage as they stay clear of infection, offer pharmaceutical services, and dissolve myths concerning utilization of medicine and especially antibiotics use to limit infection risk by reducing bacterial resistance. They also provide necessary vaccinations and counseling about preventive measures such as screening and vaccination. Poor knowledge among health workers, however, can limit effective counseling and appropriate treatment. (Shafi, et al 2008).

Capacity building and training of healthcare workers continuously, therefore, are critically essential to make them capable of being well versed with the latest infection prevention and control guidelines, antimicrobial stewardship, and chronic condition management among Hajj and Umrah pilgrims. The

training of highly skilled and well-informed healthcare professionals shall promote safe drug care, demystify the use of medicines, and, ultimately, compliance with preventive practices. Besides, inter-sectorial coordination among the multidisciplinary teams, using standardized protocols, shall enhance the delivery of healthcare services to pilgrims, thereby reducing infectious diseases and improving mass gathering health. (Salmon-Rousseau, et al 2016).

This is particularly significant in most developing countries, where patients, especially those suffering from respiratory tract infections, are more likely to seek advice from pharmacists rather than doctors due to socioeconomic factors (Syed et al., 2023). As there were no recent investigations that examine healthcare professionals' readiness for the flow of pilgrims during Hajj and Umrah seasons, it is in pursuit of this lacuna that the current study endeavours to evaluate the attitudes, knowledge, and perceptions of healthcare professionals concerning the management of chronic diseases by pilgrims.

This applies to most developing countries where socioeconomic forces usually compel patients, especially those with respiratory tract infections, to visit pharmacists rather than physicians. Such reliance reflects the significant role of pharmacists in primary healthcare and disease management in these settings (Syed et al., 2023). Nonetheless, there is a significant research gap with respect to the readiness of healthcare professionals—pharmacists and other clinicians—to appropriately respond to pilgrims' health needs during Hajj and Umrah seasons. Bridging the gap, this study will evaluate the attitudes, knowledge, and beliefs of healthcare professionals towards dealing with pilgrims' chronic conditions. Understanding such determinants is important in coming up with specific interventions that strengthen the delivery of healthcare, simplify the use of the right medication, and improve health outcomes during such mass events. The research will further examine the prevalence of endemic diseases in association with Hajj, along with the trend towards dispensation of medication among healthcare providers.

❖ **Problem statement:**

Hajj and Umrah pilgrimages attract enormous numbers of pilgrims with accompanying health issues attributed to the congregation of large populations bounded within a small geographic area. The deployment of these events increases infectious disease risks, especially in pioneering elderly with a number of chronic ailments that require efficient and regular management. The crowd consists of individuals that have come from distant places with different health standards, and it is the problem of such high numbers that throws up the issue of disease transmission, whether by respiratory or gastrointestinal means. More so, there is little accessibility of healthcare and professional advice to such pilgrims who also as foreigners may not have fully recognized the health system within Saudi Arabia. (Memish, et al 2019).

This necessitates an urgent requirement for bespoke integral health interventions to address the unique problems of mass pilgrimages like Hajj and Umrah. Adequate health infrastructure, communication, and appropriate health education according to the culture are essential interventions for preventing the transmission of infectious diseases and managing chronic disease among the pilgrims. Also, preparedness may be supplemented with intentional clinician training, mobile clinics, and keeping in stock vaccines and medicine. Early intervention in these issues will not only guarantee pilgrims' well-being but reduce capacity to overwhelm local healthcare centers, eventually translating into safer and better-organized pilgrimages. In addition to this, it is important to know which issues and practices are most prevalent among the healthcare workers in such large events so that targeted training modules and policy initiatives could be developed. (Alorfi, et al 2025).

It is therefore of great importance to assess how healthcare professionals perform along this continuum of concern in terms of their knowledge, attitude, and preparedness to manage chronic and new health events during the pilgrimage seasons. Further, the efficacy of healthcare service providers in meeting pilgrims' health needs is usually compromised by unsuitable training and the appreciation of issues arising from mass gatherings. Disparities in quality care may arise when health workers are unequipped with the right knowledge in advising and treating patients, especially during cases of self-medication or misuse of antibiotics. Misconceptions on diseases and their management will also lead to sub-optimal treatment outcomes that can aggravate public health problems like antibiotic resistance. Among pilgrims, many of them are reported to have access to medical practitioners for respiratory diseases and other conditions; however, this fact does not take away the fact that there are no recent studies on the competency and preparedness of such practitioners, thus putting doubt whether they could actually deliver services of quality. Hence, it is important to assess the knowledge and attitude of healthcare workers towards chronic conditions developing during annual pilgrimages of Hajj and Umrah and drug dispensing patterns prevailing in such cases for improved entry into health and better health outcomes for this vulnerable population. (Hoang, et al 2019).

These observations can reveal knowledge gaps, myths, and areas for improvement, thereby aiding the preparation of site-based education programs. In addition, examination of trends in drug dispensing and appropriateness to pilgrims' health needs can stop the trend of misuse of antibiotics and other medicines, hence curbing the risk of antimicrobial resistance. Prevention of such issues through systematic investigation will significantly enhance healthcare delivery, render medical practice safer, and facilitate overall health security among pilgrims throughout Hajj and Umrah seasons. The research carried out is of significant importance to the delivery of public health and healthcare, especially in areas of high concentration such as Hajj and Umrah, where millions of pilgrims of varied backgrounds and varied health profiles and risks meet. (Gautret, et al 2016).

❖ **Study purpose**

1. To Assess Knowledge and Awareness: To determine the knowledge and awareness of healthcare professionals regarding common chronic illnesses among pilgrims during Hajj and Umrah, such as symptoms, risk factors, and management options recommended.

2. To Examine Attitudes and Perceptions:

To examine the attitudes and perceptions of health workers regarding their role in meeting the health needs of pilgrims, in particular for communicable disease and chronic illness management.

3. To Evaluate Preparedness and Training: To measure the level of preparedness and training provided to healthcare professionals in managing health emergencies and chronic disease care in the context of mass gatherings.

Study importance

The undertaken study is truly significant in the realms of public health and health provision in circumstances marked by high population density such as Hajj and Umrah, which, respectively, attract millions of pilgrims from all walks of life, each holding potential distinctions in their health status. Knowing the knowledge, attitude, and perception of health care personnel regarding chronic disease management and infection control will enable the outputs from the study to yield important information on the training and preparedness gaps that exist. (Al-Tawfiq, Zumla, & Memish 2013)

Evaluation of knowledge, attitudes, and perceptions among healthcare workers about chronic disease management and infection control must be done in order to assess training gaps, readiness, and service delivery gaps. This research can inform targeted intervention, policy development, and capacity improvement activities to enhance the quality of health care at mass gatherings. This study will eventually contribute to pilgrims' health outcomes, reduce the burden of preventable complications, and strengthen the public health response in these difficult, dynamic environments. Results of this research will guide the creation of special training for healthcare professionals in a

manner that they can gain the required competencies and expertise to manage and counsel chronically ill pilgrims in the complexities of care provision during pilgrimage. (Rashid, et al 2008).

Such gaps in awareness should be put into perspective, with implications not only for improving the quality of care services onboard provided to the pilgrims but also in factoring into the development of good public health strategies to deal with the specific hurdles posed by mass-gathering settings. The findings of this work will then inform the tailoring of training interventions designed for healthcare professionals on the competencies and skills necessary to manage and counsel clients with chronic illness in the pilgrimage setting with all complexities surrounding care provision therein. This will, at the end of the day, yield a better health outcome for pilgrims and lessen the burden of infectious disease thereby contributing to establishing a healthier and safer pilgrimage journey. The significance of this study further transcends the immediate short view toward the Hajj and Umrah perspective and forwards the contribution into the broader agenda of global health and infectious disease control. (Awwad, Mohamoud & Abonazel 2021).

Last but not least, it aims to improve the health condition of pilgrims, prevent and limit the occurrence and transmission of infectious diseases, and create a healthier and more secure pilgrimage. Aside from the immediate Hajj and Umrah setting, the outputs of this research will also add value to the global health agenda at large in terms of guiding infectious disease control and upgrading health system readiness in mass gatherings across the world. Furthermore, the findings from the present research would also help in building effective public health management for such mass gatherings by empowering the incorporation of holistic health care interventions prioritizing preventive care and timely interventions. In that sense, as far as the study objectives are concerned, the next thing to explore is prescription behavior regarding medications from healthcare practitioners that can throw further light on the current practices and the problems requiring improvement. The work will further argue about the presence of misinterpretation, self-medication, and misuse of antibiotics within that health-care setting, making these subjects well known and bring health care

workers together to establish guidelines and procedures to promote safe and effective pharmaceutical care. (Rashid, et al 2008).

❖ **Research Questions**

1. How acquainted are healthcare professionals with chronic diseases that are usually seen to trouble pilgrims coming for Hajj and Umrah?
2. What are the perceptions of healthcare professionals concerning their role for the health needs of the pilgrims, specifically regarding chronic conditions and infection prevention?
3. What are the training and preparedness given for the handling of health conditions during mass gathering events such as Hajj and Umrah?

❖ **Research Hypotheses**

There are many hypotheses built into the study that would target the relationship between attitudes, knowledge, and practices of healthcare professionals in regard to control of chronic diseases among Hajj and Umrah pilgrims. The first hypothesis states that there exists a wide gap in the knowledge of healthcare professionals concerning control of chronic diseases prevalent among Hajj and Umrah pilgrims and with harmful effects on health outcomes. This knowledge gap can negatively affect the quality of care given to pilgrims and increase their health risk. The second hypothesis states that there are more positive attitudes and perceptions toward the care of pilgrims among professionally trained in infectious disease control healthcare workers than those that are outside of such training. This indicates that certain education and training need to be included to encourage the confidence and energy of healthcare workers in performing with patients.

❖ **Theoretical model**

This study is guided by a conceptual framework that integrates elements from the Health Belief Model (HBM) and the Chronic Care Model (CCM). The HBM suggests that pilgrims' engagement in

managing their chronic diseases depends on their perceptions of susceptibility, severity, benefits, and barriers related to their health conditions. Healthcare professionals' roles are crucial in influencing these perceptions through education, counseling, and provision of medical care. Meanwhile, the CCM emphasizes the importance of a prepared healthcare system, patient activation, and community support in effectively managing chronic illnesses. Together, these models highlight that the effectiveness of healthcare professionals in managing chronic diseases among pilgrims is influenced by individual beliefs, healthcare system readiness, and the unique challenges of the pilgrimage environment.

The proposed framework posits that healthcare professionals' knowledge, attitudes, and practices significantly impact pilgrims' adherence to treatment and self-care behaviors during Hajj and Umrah. Moreover, the pilgrims drew from their perceptions and beliefs and acted as mediators in responding to healthcare interventions. Some factors are systemic: resource availability, environmental difficulties (crowded conditions), and limited access to continuous care. All these factors can obstruct or enhance proper management. In light of this model, the crucial contribution of healthcare provision to health outcomes is explicitly recognized, as is the intricate interaction between individual, systemic, and environmental factors in the management of chronic illness during these mass gatherings.

Summary/Conclusion of Chapter One

This chapter has outlined the foundational context and significance of the study, emphasizing the critical role that healthcare professionals play in managing chronic diseases among pilgrims during Hajj and Umrah. It underscores the unique challenges posed by these mass gatherings, including resource limitations, cultural and language barriers, and the diverse health needs of pilgrims. The chapter highlights the importance of understanding the factors that influence healthcare professionals' practices in this setting, as their actions are pivotal to ensuring the safety, health, and well-being of

millions of pilgrims. To effectively explore these dynamics, the chapter introduces relevant theoretical frameworks—the Health Belief Model and the Theory of Planned Behavior—that provide valuable insights into the cognitive, social, and organizational determinants of healthcare behavior. Recognizing these factors sets the stage for a comprehensive investigation into the current practices, challenges, and opportunities for enhancing chronic disease management during Hajj and Umrah. Ultimately, this chapter underscores the necessity of targeted interventions and policy strategies grounded in behavioral theory to optimize healthcare delivery in these complex, culturally rich, and logistically demanding environments.

Chapter two : literature review

❖ Introduction

The present chapter provides an overview of the literature and research work done on chronic disease management among Umrah and Hajj pilgrims and the healthcare workers' role in this context. It aims to explore the current level of understanding regarding the challenges faced in delivering effective health care in mass gathering settings, the practices adopted in coping with chronic diseases, and the determinants that influence healthcare professionals' practices and decision-making. In addition, this chapter gives an overview of relevant theoretical models and frameworks that inform health behavior and clinical practice in those settings. Through a critical evaluation of the past research, an identification of the gaps in the existing literature, and a focus on best practices and learning, this review provides the background for the follow-up research. This review also underscores evidence-based methods and contextual factors required to enhance healthcare provision and health outcomes among pilgrims during these important religious events.

❖ Dependent Variables:

- Knowledge and perception of healthcare professionals regarding chronic illnesses and communication regarding symptoms, risk factors, and management.
- Attitude and perception of healthcare professionals towards their role in managing chronic and communicable disease among pilgrims.

❖ Independent Variables

- Healthcare workers' demographic profiles (e.g., age, professional qualification, gender, years of experience).
- Type and extent of training or education obtained related to mass gathering health management.

❖ **Summary of past studies :**

The situation surrounding Hajj and Umrah continues to grow in relating to millions of pilgrims who travel to Saudi Arabia every year, raising public health issues related to health problems and preventive measures in these populations. The cross-sectional study performed by Alghadeer et al. (2023) evaluated the knowledge, attitude, and perception of community pharmacists (CPs) regarding health-related problems of the pilgrims. The study demonstrated that most of the CPs possessed adequate knowledge concerning common ailments such as influenza, food poisoning, and gastroenteritis, which contribute to the majority of cases during the Hajj seasons. Most CPs were aware of the need for vaccination among pilgrims, particularly among elderly ones, and had reasonably good knowledge of the vaccines that are required by the Saudi Ministry of Health. However, some knowledge gaps concerning less-familiar ones emerged, namely the polio vaccine (Alghadeer et al., 2023). Ridda et al. (2021) have stated that the public health issue preparedness for events such as Hajj and Umrah is important.

These authors provided a model that included risk assessment, public health surveillance, and emergency planning to protect the individuals in attendance. They stated that such events are unique in that health strategies must respond to the particular risks posed as a result of infectious diseases. Additionally, they highlighted the need for involvement from health professionals and visitors to promote good public health during the pilgrimage, including healthy dialogue about the risk of illness and expectation of vaccination (Ridda et al., 2021). Another study by Tobaiqy et al. (2021) focused

on preventive measures used by Umrah pilgrims who received training on vaccination and health education.

The study results showed that a large number of pilgrims had received some vaccinations in preparation for travel; however, many more had forgone receiving compulsory vaccines, meningitis and poliomyelitis being among those. Additionally, the study associated health education with preventive practices, such as wearing face masks in public (Tobaiqy et al., 2021). Maintaining these health and safety measures during mass events is also challenging, an issue discussed by Taibah et al. (2020), who examined impediments to Hajj pilgrims adopting health-promoting behavior. They further focused on limitations such as language and limited accessibility to health centers as the limitations facing pilgrims in practicing recommended health behaviors. Most of the pilgrims, about half of them, reported practicing primary health measures by themselves, revealing the need for promoting the health communication strategies directed toward local governments and pilgrims (Taibah et al., 2020). Furthermore, Goni et al. (2019) evaluated knowledge, attitudes, and practices among Malaysian pilgrims towards the prevention of respiratory tract infection (RTI) for Hajj and Umrah. The study evidenced high levels of participants' knowledge but with unequal knowledge of preventive measures and practice, indicating the need for increased health education campaigns to fill the gap between practice and knowledge (Goni et al., 2019).

Last but not least, Alqahtani et al. (2019) conducted qualitative studies of Australian Hajj travel agents' health information and the advice they provide to pilgrims. The study found that travel agents knew about some health risks but were not very familiar with respiratory infections and vaccines for them. The study finds that improving travel agents' awareness of pilgrims' health risks can enhance the communication of critical health information to Hajj travelers (Alqahtani et al., 2019). Collectively, these studies emphasize the importance of sensitizing both the pilgrims and the healthcare workers to health hazards and preventative measures in Hajj and Umrah. The recurring

identification of knowledge gaps of some vaccines and prevention techniques highlights the urgency of continuous public health interventions particularly focused on these mega religious gatherings

❖ **Theoretical framework of the study :**

Research for the present study was mostly grounded in the Health Belief Model (HBM) and the Knowledge-Attitude-Practice (KAP) Model. The HBM is a powerful tool for assessing the complex factors that emerge in the completed intervention involving health professionals and their management of chronic disease in pilgrims on Hajj and Umrah. This perspective would imply that a person's health behavior is determined by beliefs regarding susceptibility to the disease condition, severity of the condition, perceived benefits of certain preventive measures, and perceived barriers to taking those measures. In this study, the perceptions of healthcare workers will be key determinants of their attitude and behavior towards managing chronic diseases. (Green, Murphy & Gryboski 2020). For instance, if clinicians are not aware of the danger posed by treating chronic disease among mass congregations or believe that they will not be able to handle resulting complications to the health of the patient, then their drive for providing the best treatment will be absent. By probing these assumptions, the study can establish what facets interventions need to address in order to enhance awareness and readiness among clinical staff.

In addition to the Health Belief Model, the Knowledge-Attitude-Practice (KAP) Model*offers a comprehensive paradigm for describing the interplay among what healthcare workers know, their perception of such knowledge, and the practices that they ultimately utilize. The model emphasizes the mutual dependence of knowledge, attitudes, and behaviors as determinants of health-related action. With this research, it is necessary to assess to what level knowledge that healthcare providers have about management of chronic disease during mass pilgrimages can be applied to their attitudes in order to provide appropriate care and, ultimately, practice. (Liao, Nguyen & Sasaki 2022). For example, a healthcare provider who understands the risks posed by chronic diseases will have

positive attitudes towards appropriate patient management, which will have an effect in their practice. Therefore, the KAP Model will be employed to identify gaps between the three elements and direct to specific areas of improvement through accurate education interventions.

Combining lessons learned from the Health Belief Model and the KAP Model will produce a valid and pluralistic understanding of determinants of healthcare professionals' behavior in Hajj and Umrah. This dual methodology targets both cognitive (belief and knowledge of health dangers) and utilitarian (existent care practice) aspects, with this providing a complex evaluation of the healthcare environment in these mass religious events. Targeting the lack of beliefs and knowledge gaps among health professionals, the study will aim at establishing targeted training modules with the capacity to alter existing attitudes and improve the care practice. Ultimately, this theoretical underpinning will not only enlighten the complexity of healthcare at mass gatherings but also inform strategic interventions that may optimize the readiness and response potential of health workers, which would translate into enhanced health outcomes for pilgrims.

❖ **Conclusion and Summary of Chapter Two: Literature Review**

The literature analysis concludes by highlighting the most important component of managing chronic diseases in pilgrims attending large-scale events like the Hajj and Umrah. There is a substantial knowledge gap regarding the specialized care of chronic diseases under these unique conditions, even though the existing studies offer useful information regarding general health hazards and epidemic infections. Given the varied healthcare infrastructure, budget constraints, and cultural factors influencing pilgrims, the review highlights the necessity of thorough and evidence-based interventions. Further research is also needed in the areas of long-term follow-up results of intervention programs and perceptions of healthcare staff. All things considered, this chapter emphasizes the necessity of focused, situation-specific interventions to provide pilgrims with chronic illnesses with the best possible health results during large gatherings.

Chapter three

Methodology

❖ Introduction

This chapter outlines the research methodology employed in this study to explore the management of chronic diseases among pilgrims during Hajj and Umrah. It describes the research design, setting, participants, data collection methods, and analytical techniques used to address the research objectives. The methodological framework is designed to ensure the reliability and validity of the findings, providing a systematic approach to gather and analyze relevant data. By clearly defining the research process, this chapter aims to establish a solid foundation for understanding the strategies, challenges, and opportunities related to chronic disease care in the context of mass gatherings.

Data of studies under review were, for the most part, acquired via cross-sectional studies where questionnaires were employed solely as data collection tools, permitting the assessment of the knowledge, attitudes, practices, and health behaviors of the various stakeholders involved in Hajj and Umrah at one time.

❖ Study design:

It was Cross-sectional design which was found particularly useful in obtaining data rapidly from large groups of participants and, therefore, could be viewed as a snapshot of a situation concerning health-related awareness and practices during such important religious festivities.

❖ **The study population and sampling method**

The study population encompasses all the healthcare professionals who manage the health needs of pilgrims during Hajj and Umrah. This includes doctors, nurses, pharmacists, and paramedics. A purposive sampling method will be employed for recruitment from pharmacies, airports, and sites of pilgrimage to make the sample a representative of the actual interactions with pilgrims.

❖ **Inclusion Criteria:**

- Healthcare professionals (doctors, nurses, pharmacists, paramedics) actively involved in managing the health needs of pilgrims during Hajj and Umrah.
- Professionals working at pharmacies, airports, or pilgrimage sites during the Hajj and Umrah seasons.
- Professionals with at least one year of experience in providing healthcare services to pilgrims.
- Willing to provide informed consent to participate in the study.

❖ **Exclusion Criteria:**

- Healthcare professionals not directly involved in managing pilgrims' health during Hajj and Umrah.
- Professionals with less than one year of experience in this specific setting.
- Healthcare workers on leave or not actively practicing during the study period.
- Those who refuse or are unable to provide informed consent.

❖ **Sample size:**

- A purposive sampling of 50 Healthcare professionals (doctors, nurses, pharmacists, paramedics) actively involved in managing the health needs of pilgrims during Hajj and Umrah.

❖ **Data Collection procedures**

The structured questionnaires will serve as the main means of data collection. The questionnaire will have various sections that will collect information on health knowledge, attitudes, and perceptions on chronic disease management, plus demographic data. Focus group discussions may also be used in hopes of informing qualitative data from some selected healthcare practitioners. These quantitative (surveys) and qualitative methods combined (focus groups) will be giving a full understanding of the issues at hand.

❖ Study Tools

The main tool used for data collection was a structured questionnaire consisting of several sections, addressing specific research objectives. The structured questionnaire was first pre-tested for reliability and completeness to encompass several areas such as:

- Health Knowledge: The level of knowledge of the participants regarding ordinary health illnesses and recommended vaccinations.
- Preventative Practices: Questions on pilgrims' and health care workers' assumed behavior and practice during pilgrimage.
- Demographic Data: Collecting background data, including age, sex, education level, and health status, so that it is possible to understand the determinants of knowledge and practices better.

❖ Method of analysis:

The quantitative data gathered from the questionnaires will be analyzed using some statistical software such as SPSS or R to generate descriptive statistics, correlations, and possible differences between groups. Transcriptions and thematic analysis will use qualitative data gathered in focus groups to derive key themes and patterns regarding healthcare professionals' perceptions and experiences in managing health in the context of pilgrimages.

❖ Ethical Considerations

Ethical approval will be sought from the Institutional Review Board (IRB) before conducting the study. Informed consent will be required from participants because they should know what the research entails and a right to withdraw from it anytime. Confidentiality will be assured by anonymizing data and securely storing questionnaires to protect people's identities.

Chapter four : Results

❖ Introduction

The results obtained from the data gathered for this investigation are presented in this chapter. It offers a methodical and thorough summary of the main findings about the treatment of chronic illnesses in pilgrims during the Hajj and Umrah. Descriptive statistics, thematic analysis, and any pertinent patterns or relationships found in the data are all included in the presentation. This chapter's goal is to provide an orderly and understandable representation of the study findings, which will provide the basis for the debate and interpretation that follow in the next chapter.

❖ Data analysis :

عدد What is your age group?

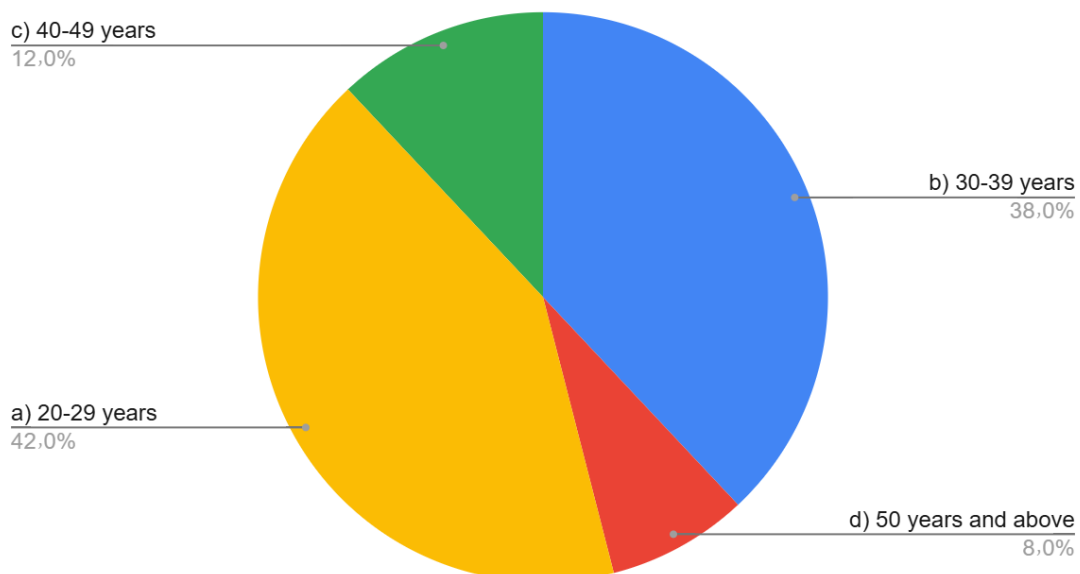


Figure (1)

According to participants' age profile, as shown in Part 1 of the data, the majority of respondents are youths, with 42% aged 20-29 and a large 38% aged 30-39. This means that the majority of the research population are relatively young adults, which could be an indication of the age distribution of pilgrims performing Hajj and Umrah, whereby the young tend to undertake these religious journeys. The explanation of this fact that 12% of the respondents belonged to the 40–49 years age group is that middle-aged adults form a significant portion of the cohort. Middle-aged people are more likely to have more life experience and perhaps greater health awareness, and this may have some influence on how they handle chronic illness while on pilgrimage. The very oldest age bracket is underrepresented in this sample, which is shown by the lowest bracket of 8% of members over 50 years of age. This can be for any number of reasons from personal preference, mobility issues, or illness, all of which conspire against the elderly participating in mass events in religions.

As age is an important factor in health status, disease prevalence, and healthcare needs during Hajj and Umrah, an understanding of the age distribution is helpful. Although the young pilgrims may have fewer chronic diseases in total, their perception of being healthy may make them underestimate health hazards. In contrast, the elderly pilgrims would either endure more or different chronic diseases, which calls for professional health care interventions. To facilitate risk-free and healthy participation regardless of age, this kind of demographic observation underscores the need for age-sensitive health education, prevention efforts, and resource allocation. It also demands age-differentiated interventions by organisers and health workers, founded on the specific health profile and vulnerabilities of each age group.

عدد What is your gender?

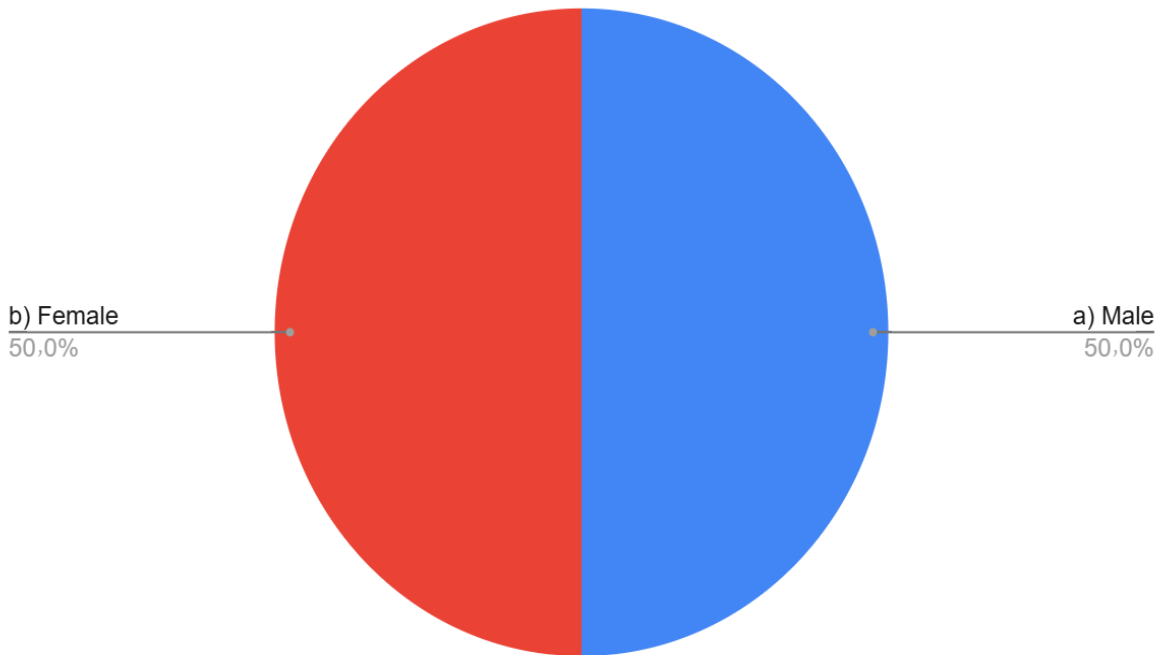


Figure 2

The gender distribution between the respondents in this study is balanced, such that half of the respondents are females and the other half males. Since the number of respondents is 50, it implies that there is a representation of 25 males and 25 females. The balance in gender is advantageous to the study in that it makes comparison between genders regarding their experiences, perceptions, and how they manage chronic conditions while performing Hajj and Umrah more meaningful.

An equal number of men and women guarantees that the findings are more generalizable to both sexes and less gender-biased. It also enables the exploration of potential differences or similarities in health behaviors, utilization of healthcare facilities, and adherence to health regulations between male and female pilgrims. All these pieces of information are necessary for designing gender-sensitive interventions and education programs for each group's needs.

Second, gender balance attendance is a measure of gender diversity among pilgrims since cultural, social, and physiological gender characteristics can impact health behavior and outcomes in religious

congregations. For example, women can have different types of challenges in managing chronic illness, such as access to medication or mobility, compared to men.

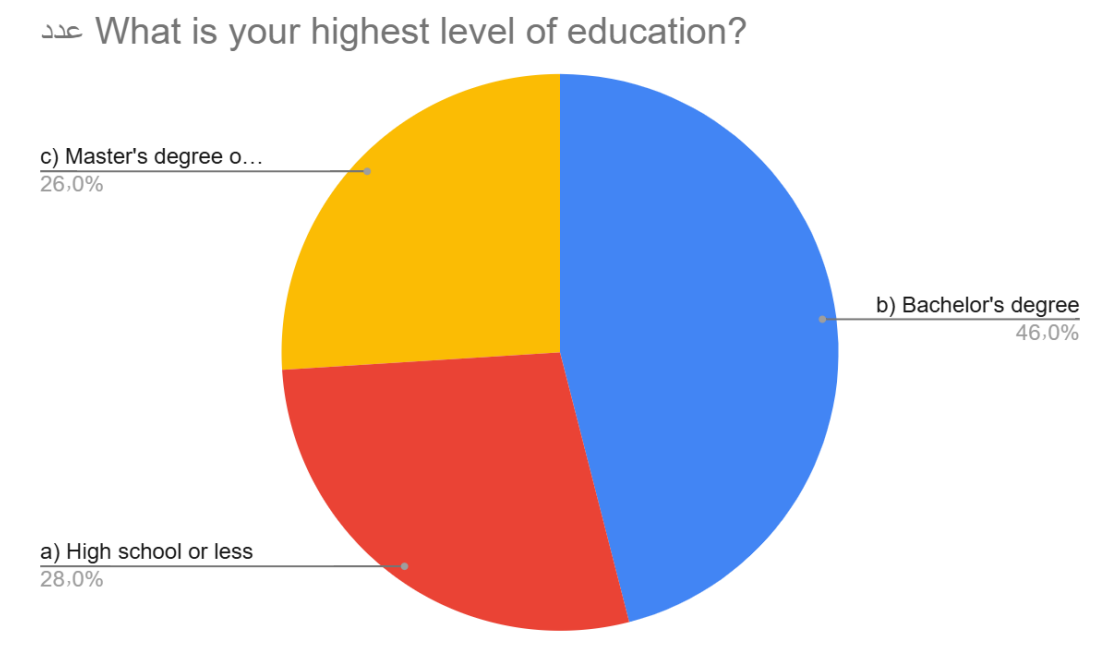


Figure 3

The education levels of the participants provide interesting data on the intellectual and socio-economic heterogeneity of the population under study. Out of 50 participants, 28% indicated high school education or lower, 46% indicated a Bachelor's level, and 26% indicated a Master's level or higher. The breakdown reveals highly educated participants, with close to three-quarters of the participants indicating at least a Bachelor's level of education. The fact that nearly half of the participants (46%) have a Bachelor's degree means that a majority of this population are quite well-educated, with presumably higher health literacy, awareness, and understanding of medical guidelines and health management mechanisms. Such educational levels can influence how people perceive health risks, adhere to medical guidelines, and manage health care facilities, especially in the challenging environment of Hajj and Umrah.

Conversely, 28% of the respondents who were educationally qualified to high school level or less may have other difficulties, including having restricted access to health knowledge or understand complicated medical directions. This indicates that health education courses should be provided and tailored to fit the various literacy levels so that all the pilgrims can effectively control their chronic disorders and adhere to preventive care when performing pilgrimage. The 26% response with a Master's degree or more indicates that a quarter of the sample have advanced levels of education, and this may be connected with greater health awareness, prospective health practice, and higher involvement in health-related decision-making. These individuals can also be peer educators or community leaders.

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How many years of experience do you have working in health...

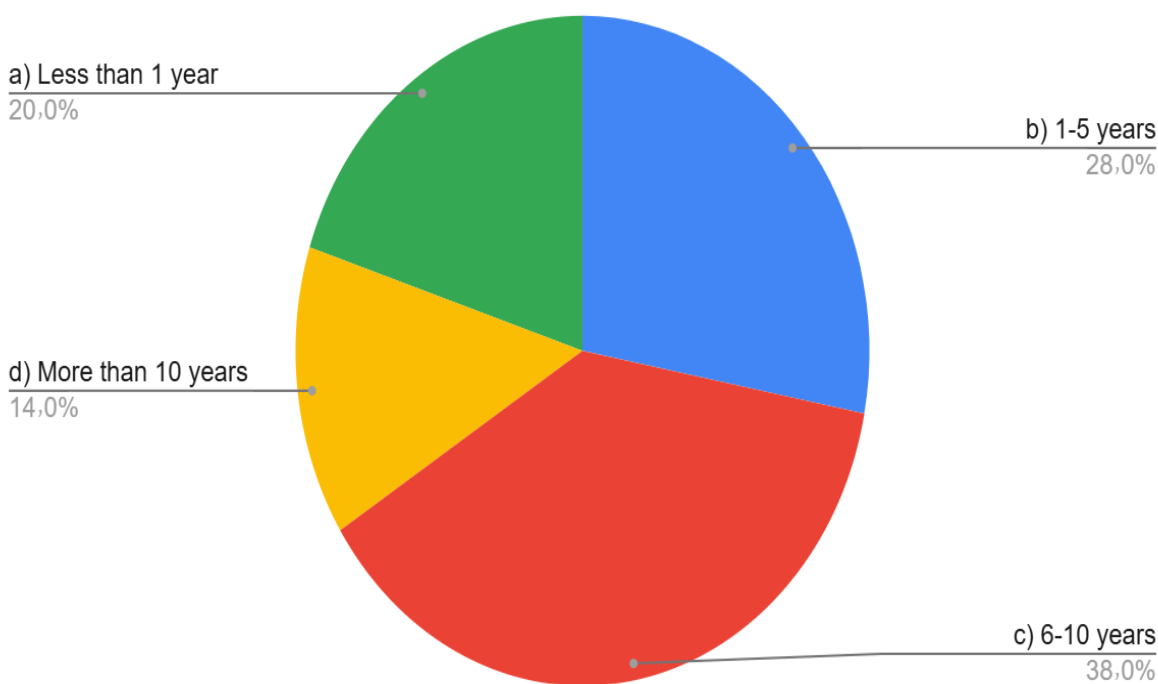
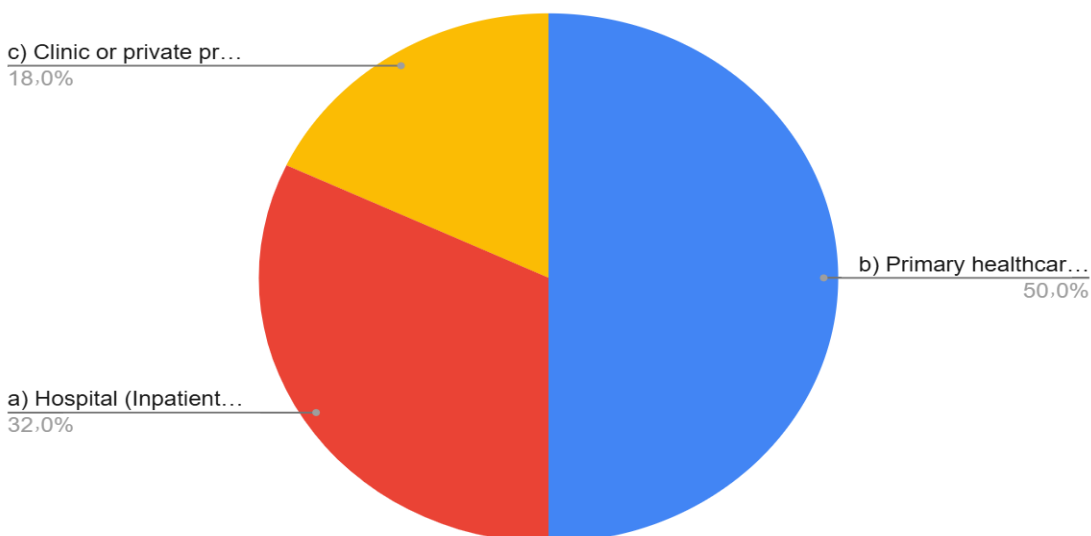


Figure 4

The health experience breakdown among the 50 respondents gives insightful information about their exposure and familiarity with medical interventions and patient care, which can have serious

implications for their attitude to managing their health while undertaking Hajj and Umrah. According to the data, 20% of the respondents have experience of less than one year, 28% have between 1 and 5 years, 38% have 6 to 10 years of experience, and 14% have more than 10 years of healthcare professional practice. This range of experience identifies an experienced group, with over half (52%) having 6 or more years of professional practice. The larger segment with 6-10 years of experience shows that the majority of the participants are familiar with healthcare processes, patient relationships, and medical information, which may provide a positive contribution to their management of health and assist others during pilgrimage. However, a significant population (20%) of less than a year's standing might well be quite new to the healthcare professional setting and thus potentially present practical skill, confidence, or complicated case exposure problems. Such experience diversity warrants the demand for individualized training, ongoing education, and support system to ensure that all healthcare professionals, regardless of seniority, are capable of delivering effective care and counseling to pilgrims. Moreover, the blending of experienced and inexperienced healthcare professionals points towards the necessity for creating knowledge-sharing and mentorship among healthcare teams. Such collaboration can enhance the overall quality of total care, especially in the special and extreme scenario of Hajj and Umrah.

عدد Which healthcare setting do you primarily work in?



Staffing pattern among the healthcare providers in each setting determines the crucial role that each one plays in managing health at mass gatherings. With 50% of the respondents being employed in primary healthcare centers, it highlights the significance of these centers as the point of entry for most pilgrims. Primary care practitioners are the key to initial screening, chronic disease management, providing health education, and carrying out early interventions that can halt the progression of health problems. Their accessibility and community-based design make them essential to the delivery of continuous health surveillance and prompt referral, thereby freeing secondary and tertiary care facilities from their burden. Meanwhile, 32% of respondents working in hospitals emphasize the need for improved emergency and specialist care skills, which are extremely significant for managing acute medical emergencies, serious disease, or complex medical cases above the limits of primary care.

عدد

What is your current professional role?

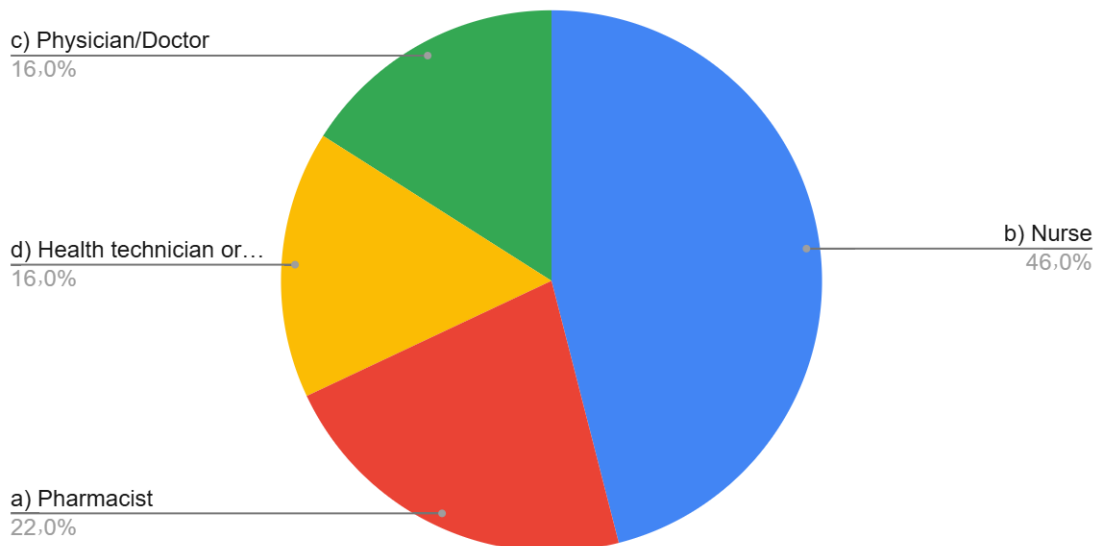


Figure 5

The data shows a multiprofessional profile of those involved in the delivery of healthcare services during mass events with nurses having the greatest percentage at 46%, followed by pharmacists at

22%, physicians or doctors at 16%, and health assistants or technicians also at 16%. The profile underscores the multidisciplinary team profile involved in the delivery of healthcare services in such a diverse environment where all categories input into the delivery of comprehensive and effective healthcare services.

Nurses make up nearly half of the overall respondents, consistent with their central position in patient care, health education, and clinical service coordination. Their intensive training in patient assessment, medication administration, and health promotion makes them the key to catering to the complex health needs of pilgrims. Pharmacists, who accounted for over a fifth of the participants, are at the heart of dealing with medication, offering safe prescribing, and dispensing critical health information, especially within a context where medication compliance and drug safety matter most. Physicians or doctors, though the lower percentage, play the critical role of diagnosing intricate diseases, performing procedures in the medical field, and making crucial treatment decisions. The employment of health assistants or staff techs highlights the support framework that facilitates frontline provision of healthcare, assisting with routine procedures, patient monitoring, and back-end work that facilitates smoothness in clinical activities.

This heterogeneous professional setting highlights the importance of a coordinated, team-based response to healthcare in mass events. Health functions complement each other, and effective communication and coordination are the hallmark to addressing the intricate health challenges within such a setting. Adjusting training programs, resource allocation, and operations to meet this diverse workforce can facilitate their capacity to offer quality care. Identification of the unique roles of each professional group and facilitation of interdisciplinary collaboration will ultimately result in improved health outcomes, patient safety, and an optimal response to routine health issues as well as emergencies among such mass gatherings.

عدد In which setting do you primarily interact with pilgrims?

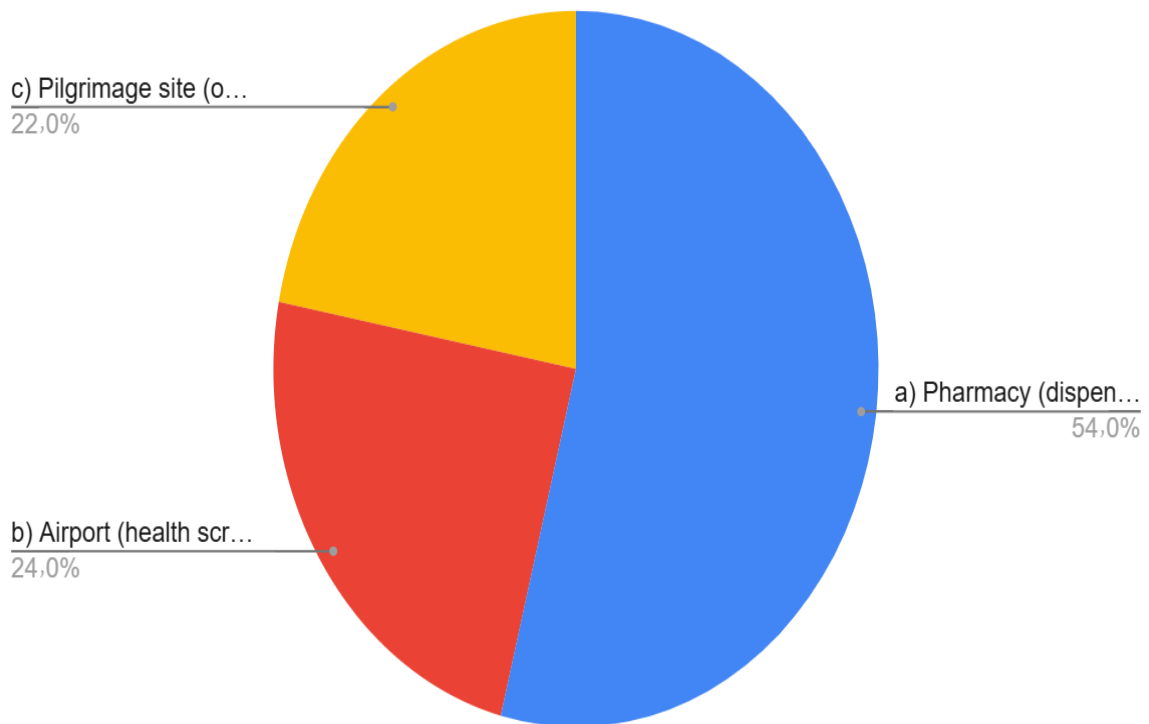


Figure 6

The data collected on the primary locations where health professionals interact with pilgrims bring out salient aspects of healthcare provision during Hajj and Umrah. Based on the responses, the majority 54% of the participants mainly interact with pilgrims on the pharmacy locations with other purposes being dispensing of medication and counseling. This means that pharmacies are the focal points for drug management, health counseling, and continuous care of pilgrims, pointing to the roles of pharmacists and pharmacy staff in the overall health infrastructure during such religious gatherings.

Whereas 24% of the respondents encounter mainly pilgrims in airports, screening for health and services play a critical role in early detection of disease, control of communicable diseases, and giving the first information on arrival or departure. Such a setting plays a significant role in

determining health protocols, handling travel-related health issues, and guaranteeing security to both the pilgrims and society in general.

The remaining 22% of interactions occur at the actual pilgrimage sites themselves, where first aid or on-site health facilities are provided. This is because there is a need to act quickly in cases of emergencies, minor injuries, or acute health incidents that occur in the course of the pilgrimage. It highlights the need to have manned and equipped medical stations at strategic locations within the pilgrimage sites.

عدد Which of the following vaccines are recommended for pilgrims before Hajj or Umrah?

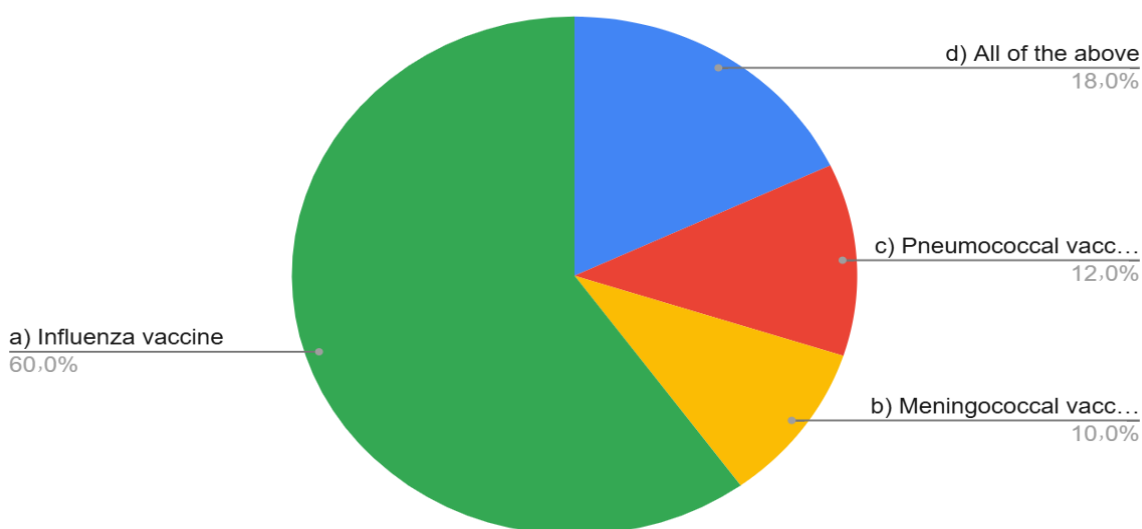


Figure 7

The data reveals that a majority of the respondents (60%) recognize influenza vaccine as an important vaccination for pilgrims prior to Hajj or Umrah. This is a high rate considering the widespread awareness of seasonal risk posed by influenza viruses, especially in mass gatherings where respiratory droplet transmission would spread rapidly through dense populations. Influenza

vaccine is also one of the pillars of preventive measures in Hajj because it not only protects the individual pilgrim against serious illness but also reduces the risk of outbreak in the population at large and in the community.

A lesser but notable percentage (10%) identified the meningococcal vaccine as recommended. Meningococcal infection was previously associated with Hajj outbreaks, and therefore health authorities like the Saudi Ministry of Health implemented meningococcal vaccination of pilgrims. This vaccine is further particularly relevant since meningococcal meningitis can cause serious disease and high mortality if it is not treated promptly. The licensure of this vaccine is a testimony to the recognition of the necessity to prevent deadly meningococcal disease in the close and shared environment of Hajj and Umrah.

The pneumococcal vaccine, recognized by 12% of the respondents, is especially relevant to high-risk groups such as the elderly, chronic diseases, or immunocompromised patients. Pneumococcal disease leads to pneumonia, meningitis, and septicemia, and in risk groups, is dangerous. Pneumococcal vaccination is not compulsorily given to everyone pilgrimaging but is, nonetheless, advised by health officials in case of increased risk, indicating the necessity for focused vaccination campaigns.

Interestingly, 18% of the respondents selected "All of the above," indicating an awareness that a complete vaccination regimen is optimum for protection against health risks while attending Hajj and Umrah. Such broader awareness aligns with global health guidelines, which recommend multiple vaccinations in an attempt to neutralize numerous infectious diseases poses in mass gatherings.

عدد Which of the following is not a common health illness that pilgrims may experience during Hajj or Umrah?

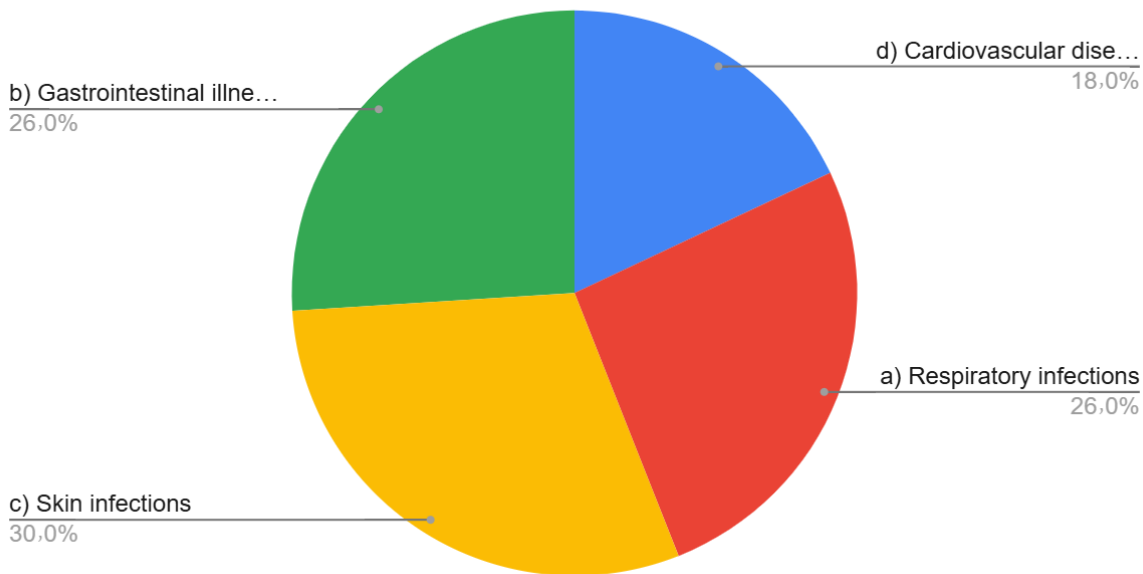


Figure 8

The data indicate that cardiovascular diseases (18%) are perceived by fewer of the subjects as not being among the most common illnesses pilgrims face during Hajj or Umrah. This is an understanding that, although cardiovascular diseases do constitute severe health issues in general, they are less likely to be faced as acute diseases in mass gathering contexts than other diseases.

In contrast, respiratory infections and gastrointestinal diseases occur more often (each 26%), emphasizing their status as the most common illness conditions occurring during pilgrimage. Such illnesses are usually linked with close contact, environmental contact, and hygiene problems in confined settings. Skin infections also take place at quite a high 30%, likely due to environmental contact, hygiene, and skin contact in confined settings.

The data reveals that a majority of the respondents (52%) accept hypertension and diabetes as common among pilgrims and believe that they require proper management while on a pilgrimage. This recognition creates a condition where it is realized that most pilgrims, especially people of

different age groups or backgrounds, have chronic diseases like hypertension and diabetes, which may greatly affect their health as they proceed for Hajj or Umrah.

عدد Regarding chronic illnesses among pilgrims, which statement is correct?

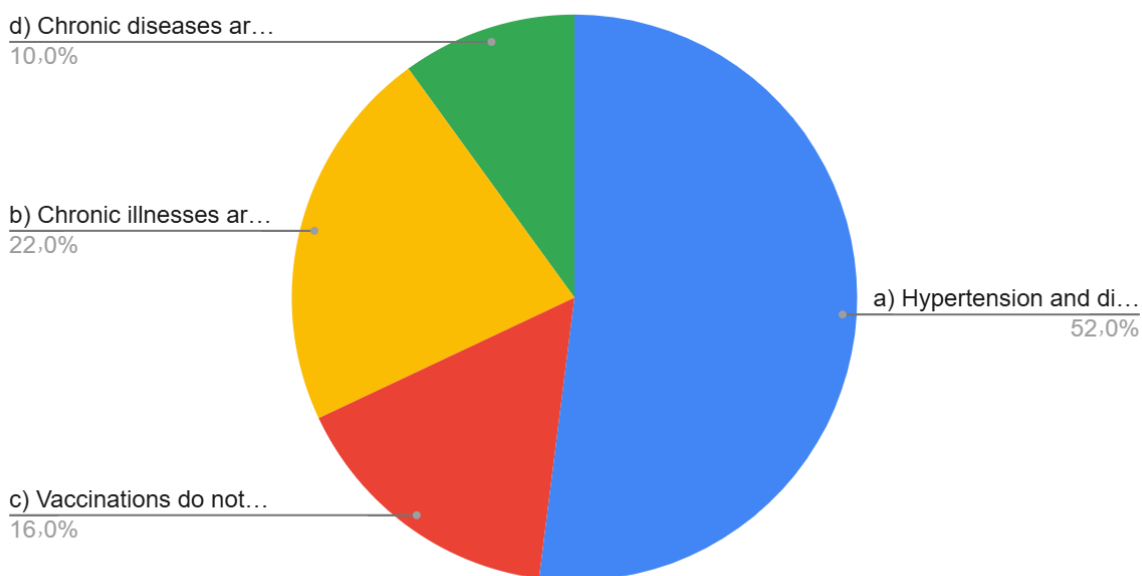


Figure 9

Umrah and Hajj are physically taxing religious practices involving prolonged hours of walking, fasting periods, and exposure to harsh climatic conditions. All of these factors can aggravate the existing illness or bring about acute complications for a patient having a chronic disease. For instance, the uncontrolled form of blood pressure may lead to cardiovascular complications, and the uncontrolled state of diabetes can lead to hyperglycemia or hypoglycemia that are life-threatening if not monitored and well controlled. So, to lessen the risk on pilgrimage, it is important that pre-travel assessment of medical conditions of such pilgrims having chronic diseases, adherence to the notations of medicines, and individualized health education are given.

The second most common answer (22%) suggests that the pilgrimage activities will most likely not affect chronic diseases. Although physically stressful, the majority of people with well-managed

chronic diseases are unlikely to see their health dramatically deteriorate if good medical counsel is followed. However, this viewpoint may be neglecting potential dangers and implications of controlled management, as well-managed chronic diseases are apt to destabilize when exposed to stress or physically straining conditions. It is indicative of ongoing medical follow-up and readiness.

The myth that vaccinations do not play any role in the treatment of chronic diseases during Hajj and Umrah (16%) is wrong. Vaccinations, in their purest sense, are preventive tools against infectious diseases, which can equally prove to be adversely harmful to patients suffering from any chronic ailments. For instance, infections like influenza or pneumococcal pneumonia may possibly complicate seriously in patients with an underlying disorder. Hence, vaccination stands as a very important aspect of health care management of chronic patients during pilgrimage to prevent a further health burden on these patients during pilgrimage.

Lastly, just 10% view the chronic disease as a rarity among pilgrims. This belief is an untruth, given that epidemiological findings have consistently shown that such chronic conditions as hypertension, diabetes, and cardiovascular disorders are actually quite common among those engaged in Hajj and Umrah, particularly because of the considerable elderly pilgrim population. The prevalence of these diseases then must be taken into account when planning for health, resource provision, and education to ensure safe pilgrimages.

عدد How familiar are you with the recommended vaccinations for pilgrims with chronic conditions?

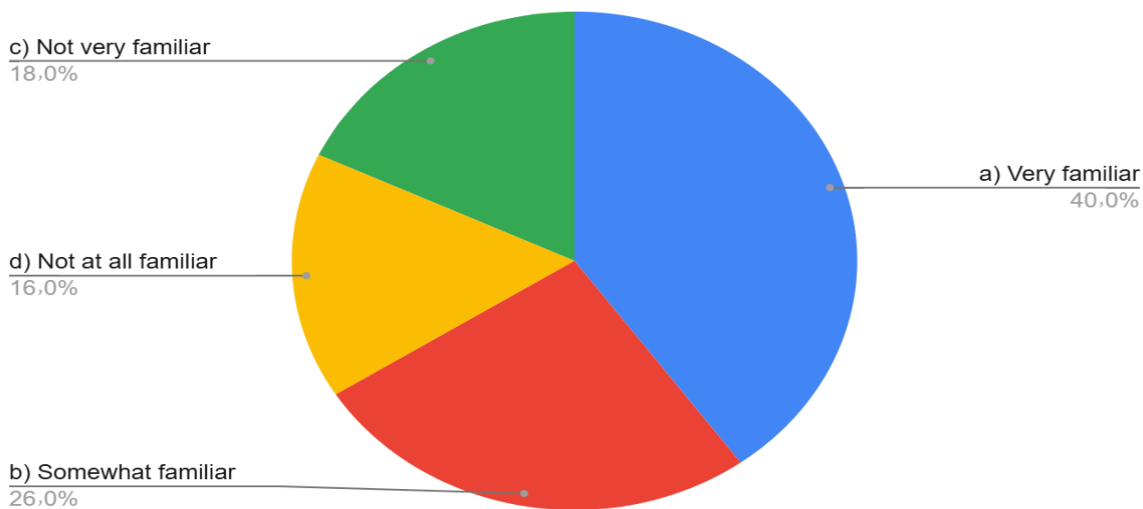


Figure 10

The results show that 40% of the respondents indicate that they are well informed about the vaccines pilgrims with chronic diseases should receive, and this is a high rate of individuals being well informed about the importance of vaccinations among risk groups for Hajj and Umrah. The information is comforting, as it gives proper dissemination of health information and potentially effective outreach by health education programs and healthcare providers among risk groups.

An additional 26% say they are very knowledgeable, an intermediate level of knowledge that may be increased by more education and targeted health communications. This group would benefit from didactic teaching, with particular vaccines to be administered, when to administer them, and the benefits of vaccination in reducing infectious complications that can exacerbate chronic disease.

But most, 18%, are not very knowledgeable, and 16% are not knowledgeable at all about recommended vaccinations. This indicates a lack of knowledge in the majority of the population, with serious health consequences for effects during pilgrimage. Ignorance will definitely promote under-vaccination, with higher risk of preventable infectious diseases such as influenza,

pneumococcal pneumonia, or meningococcal disease—especially in those with chronic diseases and whose immune system is already weakened.

This case sheds light on the immediate need to persist with health education campaigns to create awareness of the vaccination importance among pilgrims who have underlying conditions. The religious denominations, health authorities, and travel clinics should try to disseminate accurate simple information about the vaccines required, the pre-travel schedule for vaccination, and the advantages of immunization in avoiding complications.

Additionally, health care workers would actively screen pilgrims with chronic disease in pre-travel consultations for history of immunization, with the significance of immunization within integrated health care. Contextual education interventions that are culturally adapted, communication, and direct access to vaccine services would significantly improve awareness and vaccination coverage among this high-risk group.

عدد Which of the following best describes your knowledge about managing chronic diseases during mass gatherings?

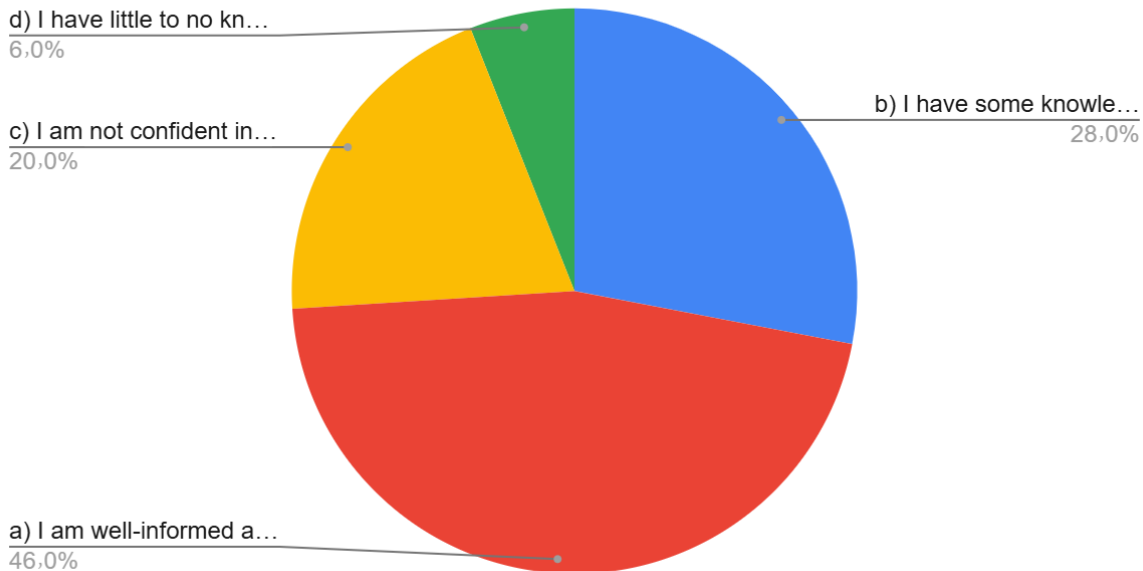


Figure 11

The statistics reveal general positive sentiments towards the confidence and ability of individuals in handling chronic diseases in mass events such as Hajj and Umrah. Of particular importance is that 46% of the respondents indicate being well-educated and confident in handling such diseases, a good reflection of awareness and preparedness among nearly half of the respondents. Confidence is likely founded on prior experience, training, or education by health care workers or programs of community health.

But no less important is the fact that 28% of the respondents admit to having some knowledge but require training, once more confirming a large number of people who think they have knowledge but potentially do not have complete skill or knowledge to deal with future health issues that can arise as part of pilgrimage activity. This is a very important area of focus for interventions in education

because imparting them with additional knowledge and practical skill is sure to enhance health outcomes greatly and reduce emergency medical requirements at the time of mass events.

Yet, 20% of the interviewees report that they are not familiar with handling chronic disease treatment in Hajj or Umrah, and 6% have little or no familiarity with this issue. This population is particularly vulnerable, since a lack of information and self-assurance may lead to ineffectual self-care, belated response to health crises, or excessive reliance on external assistance. Such clients can be assisted by skill-training modules, e.g., workshops, counseling, and available study manuals that are fashioned for their needs and literacy level.

The importance of the information lies in the possibility of improving overall safety in health in mass events by means of regular training and capacity-building interventions. Public health organizations, religious communities, and medical caregivers must prioritize the establishment of strong training modules focusing on management of the endemic chronic illnesses, early warning signs of complication, medication management, and referral to urgent care. In addition, integrating health education into pre-travel counseling, outreach in the community, and pilgrim preparation schemes can raise competence and self-confidence among them.

Likewise, promoting peer support groups, providing clear, easy-to-read educational leaflets, and utilizing online media or mobile health applications can bridge the knowledge gap, especially for those who are limited by prior experience or self-confidence.

عدد Do you know the recommended actions to take if a pilgrim with a chronic disease experiences an emergency during Hajj...

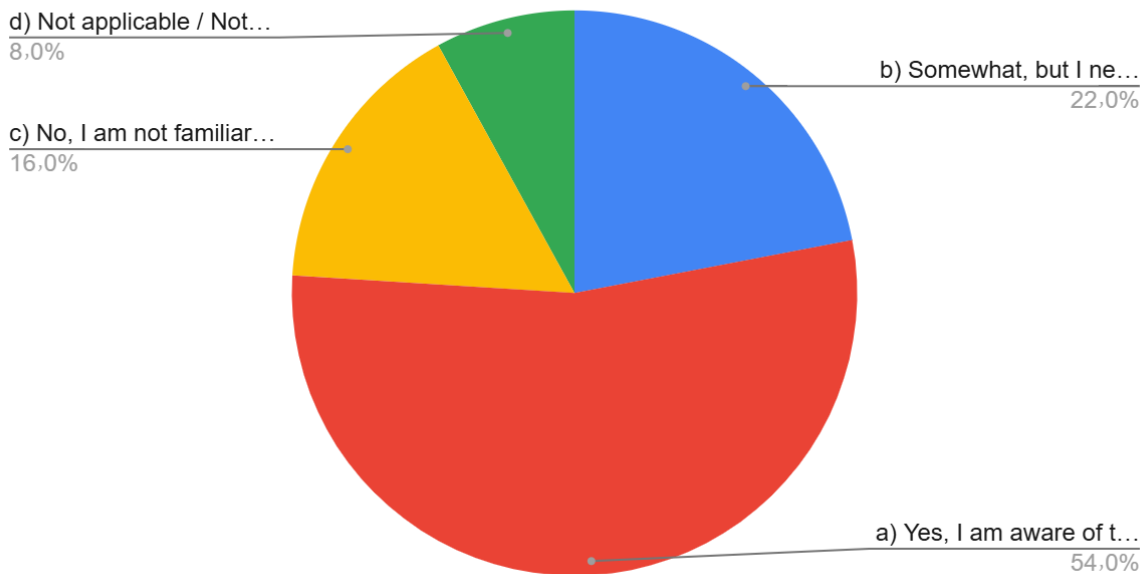


Figure 12

The figures indicate that over half of the interview respondents, 54% to be exact, are aware of the appropriate procedures and protocols to undertake in case a pilgrim with a long-term condition experiences an emergent condition while undertaking Hajj or Umrah. This is reassuring since it shows that there is a significant proportion of the individuals involved in catering to or caring for such pilgrims who are aware of emergency procedures, and this is significant in ensuring timely and efficient action in case of emergencies. This data has the potential to reduce the level of health emergencies, facilitate timely medical care, and even preserve lives.

But the fact that 22% of those interviewed do know something but think they must know more, indicates a huge potential for focused education. They may be aware of the principles but not procedural skills or the confidence to respond at speed in a crisis. Bridging this deficiency with repetition training, simulation exercises, or readily available information materials can maximize their competence and confidence and ultimately improved emergency response outcomes.

Conversely, 16% say they don't know what to do, something that is alarming with the severity of health crises among pilgrims suffering from chronic illnesses. Lack of awareness can lead to delayed action, wrong handling, or holding out for external assistance, which may not be accessible. This consequently leaves us in need of optimum training courses and efficient guidelines with a priority focus for caregivers, volunteers, and healthcare workers managing mass events.

The other 8% say the question doesn't apply or don't know, which might be a gauge of being disconnected with emergency management, having no idea what their role is, or being badly acquainted with procedure. For them, increasing awareness and clarity about their role can make them better equipped and better coordinated to respond.

عدد How often do you educate pilgrims about the importance of vaccination and disease prevention before Hajj or Umrah?

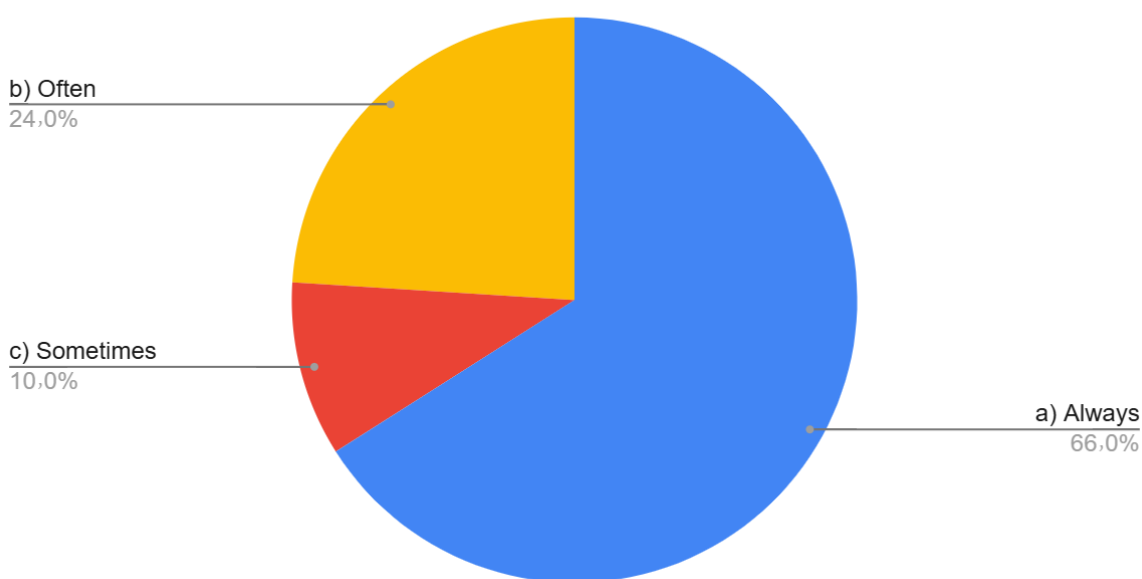


Figure 13

This is received with an astonishing level of pre-emptive health education among the attendees, as 66% of them usually inform pilgrims about the requirement for vaccination and disease prevention prior to Hajj or Umrah. It is a really astronomical response rate that manifests a very deep level of

commitment on the part of healthcare workers, event planners, or community leaders to promote preventive health behaviors, especially in the context of mass gathering where infectious diseases can rapidly spread through close contact and congestion.

An additional 24% also report they regularly engage in education activities, indicating regular but somewhat dampened reinforcement of health practices. This indicates continuous awareness and routine use of health promotion activities needed to deliver high coverage with vaccinations and good hygiene among pilgrims.

The final 10% indicate that they only occasionally instruct pilgrims on such topics, which may be proof of infrequent efforts possibly due to insufficient resources, insufficient time, or other infrastructural limitations. An occasional habit, even though still promoting health, may generate deficits in knowledge and adherence among pilgrims, which may increase their risk to preventable diseases.

عدد During the pilgrimage, how likely are healthcare professionals to recommend the following to pilgrims with

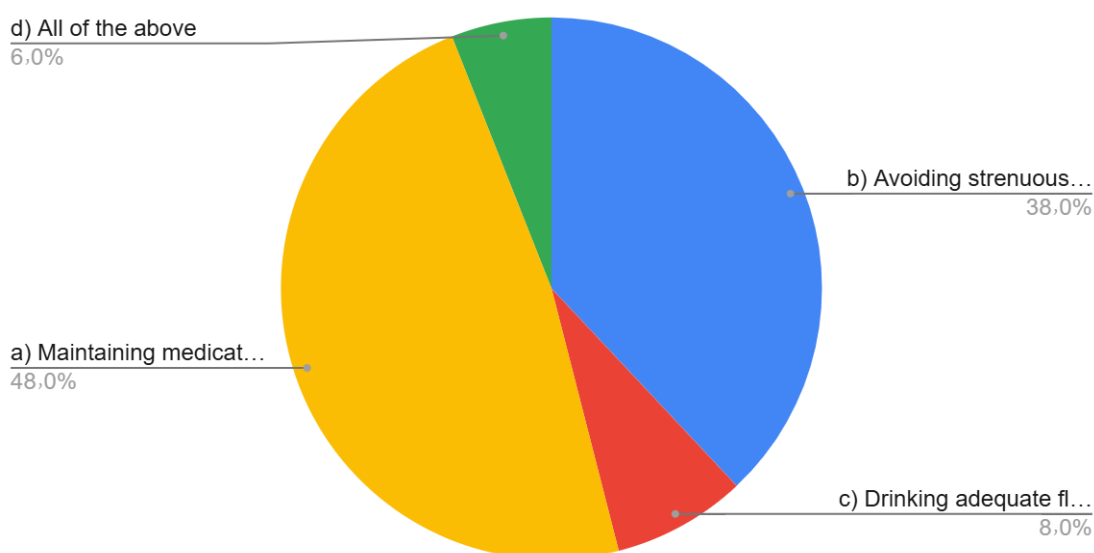


Figure 14

The findings indicate that nearly half of the healthcare practitioners (48%) would most likely be in favor of sustained maintenance of medication adherence among chronically ill pilgrims throughout pilgrimage. This is an important recognition of medication adherence as a support of chronic illness management and avoidance of exacerbation or complication within a high-demand setting. It is especially essential to monitor pilgrims on their routine medication regimens under these activities, where deviations from routine, access issues, or communication problems can undermine health outcomes. This emphasis on medication compliance also reflects concern on the part of health workers with the increased vulnerability to the crowded, physically challenging pilgrimage setting of those who have chronic conditions.

Further, 38% of the respondents will advise pilgrims to avoid physical exertion at the peak of heat, a preventative strategy against heat-related illness and dehydration, particularly among pilgrims with pre-existing medical conditions. The hot climate and physically strenuous rituals or movements of the pilgrimage make it reasonable to provide such advice in order to prevent dehydration, heatstroke, or cardiovascular incidents. Conversely, only 8% would recommend drinking sufficient water to prevent dehydration, implying either that this is already implicitly being taken to fall under other recommendations or that it is regarded as a normal, common-sense strategy less often made overt. The fact that only 6% of responders offered "all of the above" indicates that most professionals have the range of accepting the efficacy of a multicomponent model. They may, however, commission some interventions on a case-by-case decision or pragmatic necessity.

عدد What is your usual practice when managing a pilgrim with a chronic illness who reports symptoms of illness?

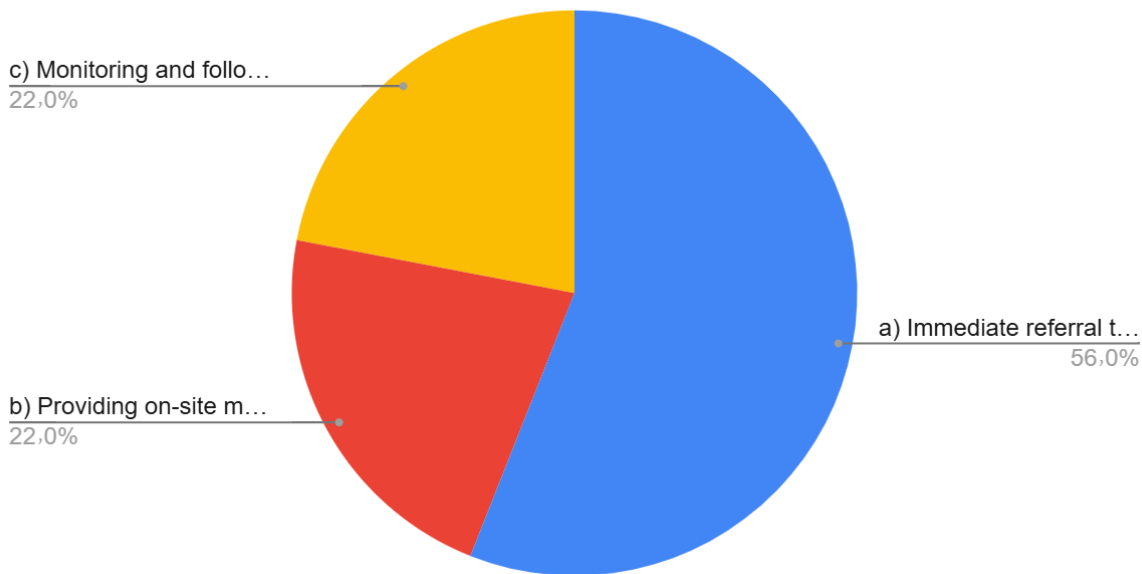


Figure 15

The findings indicate that the biggest portion of the respondents (56%) practice direct referral to an upper facility in the event of management of a pilgrim with a chronic ailment presenting symptoms. This practice is indicative of a conservative and safety-oriented practice, putting a premium on the need for urgent, specialized medical intervention for potentially serious or deteriorating conditions. It is attuned to the fact that certain symptoms for chronically ill patients must be addressed by cutting-edge diagnostics and care that is not on-site and therefore sensitive to patient safety and optimal outcomes.

On the contrary, 22% of the participants support on-site medication and advice provision. This approach reflects a capacity and confidence in conservative management of symptoms, possibly through the provision of appropriate medication, advising, and monitoring the patient briefly. This may be effective for mild or controllable symptoms, reducing unnecessary referrals and allowing quick alleviation, especially in situations where immediate transfer may prove challenging because of crowding or logistical problems.

Similarly, an additional 22% adopt a policy of later follow-up and monitoring. This is a strategy in which initial treatment consists of monitoring and perhaps reassurance, with the aim of continued evaluation or referral if the symptoms do not improve or are worsening. This may be an acceptable approach to mild symptoms or where initial treatment is designed to stabilize the patient before definitive intervention.

عدد How prepared do you feel to handle health emergencies involving chronic diseases during Hajj and Umrah?

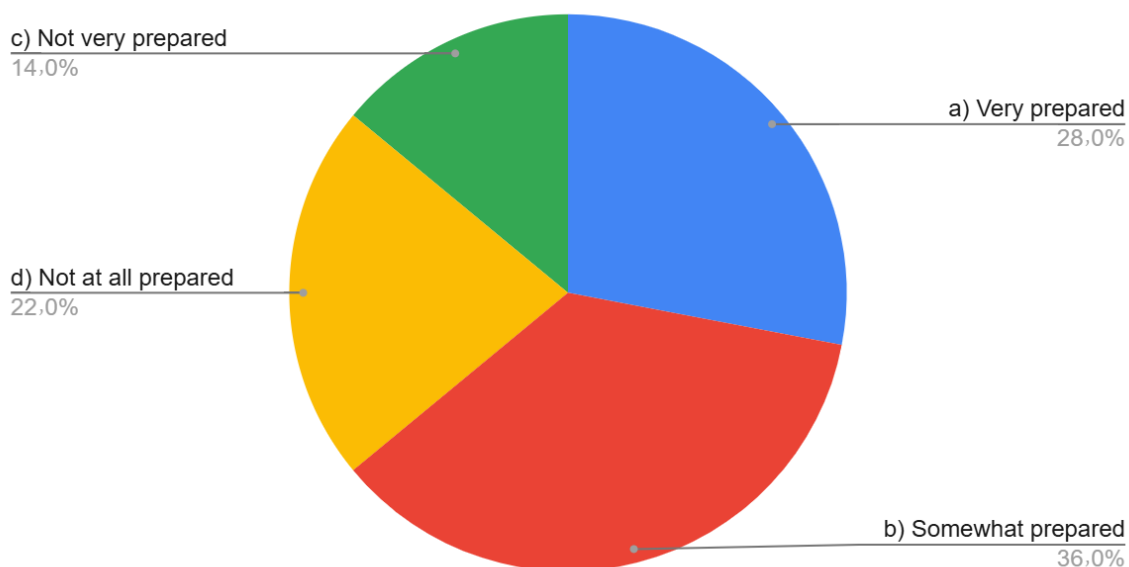


Figure 16

Results provide a balanced picture of the perceived readiness of the respondents to manage health emergencies due to chronic diseases during Hajj and Umrah. As 28% are very prepared, there is a baseline level of confidence in quite a substantial percentage of healthcare providers or organizers in being able to respond effectively to such emergencies. This sense of preparedness most likely comes from adequate training, experience, and availability of resources, which are necessary for effective and timely intervention in complex health states.

A greater portion, 36%, indicates that they are somewhat prepared. To a certain degree, this reflects confidence, but it also implies that training, resource allocation, and emergency protocols may all present areas of improvement. Perhaps, these respondents are visualizing additional capacity-building requirements if they are serious about raising their readiness from mid-level to high-level so that they can respond quickly and well, whenever the need arises.

In contrast, 14% consider themselves just a little well prepared, while 22% say that they are not prepared at all. Representing almost 36% of the sample, these figures expose serious faults on the preparedness front, which could result from lack of training, resource limitations, or unproficiency in the management of complex emergencies involving chronic conditions. These gaps pose threats to patient safety-bearing in mind the potentially catastrophic implications of unmanaged or badly managed chronic health emergency situations in an already congested and resource-starved environment of Hajj and Umrah.

عدد Do you believe that additional training on managing chronic illnesses during mass gatherings would improve health

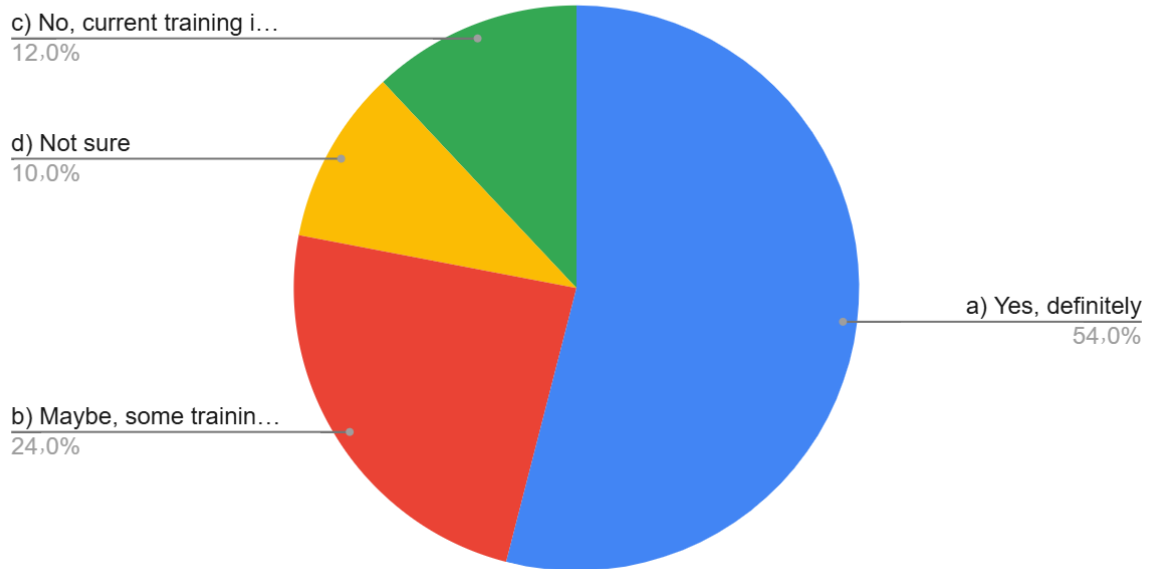


Figure 17

The figures indicate a wide consensus among the respondents about the benefits of extra training in the management of chronic diseases for mass gatherings such as Hajj and Umrah. With a majority of 54% responding "Yes, definitely", it is clear that there is a common perception that extra training would make a great difference in the health condition of chronically diseased pilgrims. This group likely believes either that current training programs have defects or that the evolving nature of medical conditions in the context of mass gatherings necessitates continuous skill enhancement.

An additional 24% believe that "Maybe, some training could help", which points towards cautious optimism. This category identifies benefits but may also be considering factors such as resource availability, training quality, or the nature of the illnesses. They would possibly support targeted or specialized training modules for maximum impact.

On the other hand, 12% think that "No, current training is sufficient" and are confident in the protocols and educational programs that are in place. Due to experience or established norms, they

might think that the training provided now is sufficient to prepare volunteers and medical professionals to handle chronic illnesses at large events.

Lastly, 10% are unsure, suggesting that more data or clarification is required about the efficacy of further training initiatives.



Figure 18

According to the data, a sizable percentage of respondents are enrolled in continuing education programs on managing the health of large gatherings. Actually, 42% of them participate on a regular basis, which shows that they are keen in staying current and improving their skills in this crucial field. Regular engagement likely reflects institutional policy, personal interest, or recognition of the importance of ongoing education in managing optimally health issues during mass events like Hajj and Umrah.

An additional 30% only infrequently attend, indicating that although they appreciate these training events, their availability, workload, or access to workshops may limit their attendance. Even yet, their sporadic involvement keeps a certain level of awareness and preparedness.

On the other hand, 22% say they never receive any such training, while 6% say they just occasionally receive it. These results point to possible gaps in continuing education that might result from a lack of funding, ignorance, or practical issues. These groups may not be as prepared to handle medical emergencies during large crowds if they do not receive regular training.

❖ **Research findings:**

To the best of our knowledge, there are few studies that have explored the attitude, awareness, and preparedness of healthcare personnel responsible for management of chronic conditions during Hajj and Umrah, particularly in the context of mass gathering medical care. The majority of literature has placed greater focus on prevention of infectious diseases and medication use during such events (Salmon-Rousseau, et al 2016) and paid less attention to control of chronic diseases. This research provides important information regarding awareness, attitudes, and preparedness of healthcare providers in response to chronic diseases among pilgrims, important as the epidemiology of such diseases is high during Hajj and Umrah. Consistent with earlier research (Al-Tawfiq, 2017), our results show that most of the younger healthcare professionals (between 20-39 years) form the majority of respondents, indicative perhaps of the age profile of the pilgrimage health service workforce. The gender split was equally balanced, 50% male and 50% female participants, which maximizes the generalizability of the findings across both genders. This agrees with studies by Lindsay, et al 2019 who emphasized the importance of gender-sensitive approaches when developing effective health education and intervention programs, considering potential variations in terms of health literacy, medication compliance, and access to healthcare resources among male and female pilgrims. Detection of such variations may contribute to the creation of gender-based health

promotion programs that address gender-based concerns and, thereby, improve health outcomes during mass gatherings

Education-wise, 46% of the participants held a Bachelor's degree and 26% had a Master's or higher degree. This has identified a highly educated population with a fairly high level of attainment, as Williams, et al 1998 argued higher levels of education were correlated with greater health literacy, enhanced knowledge of chronic disease management, and confidence when it comes to emergency response. Conversely, the 28% with high school education or less may require to go through simplified and user-friendly training modules to close knowledge gaps and enhance their capacity to deal with pilgrims' long-term conditions. Targeted educational interventions, as suggested by Williams et al. 1998 , are imperative to make all healthcare workers, regardless of education level, adept for pilgrimage healthcare challenges.

Exposure to healthcare among the participants was very diverse, with over half of the participants (52%) having a practice of six or more years. The diversity calls for consistent professional development and mentorship initiatives, as indicated by Tomio & Sato 2014 to equip less experienced clinicians with up-to-date knowledge in emergency management and managing chronic disease. Beginner practitioners particularly require extensive orientation and in-service training, with emphasis placed on protocols for the handling of hypertensive emergency, diabetic emergency, and medication compliance problems commonly found among the pilgrims. Interdisciplinary communication and information-exchange among healthcare providers can also improve treatment safety and quality during Hajj and Umrah

The abundance of healthcare professionals in various locations indicates significant roles undertaken by hospital (32%), primary healthcare centers (50%), and pharmacy chains (54%) in the maintenance of pilgrims' health. The predominant role played by pharmacists aligns with Yezli et al.'s observation that pharmacists are most often the first point of contact for problems associated with medications

during Hajj. Increasing the training of pharmacists in infection control, drug safety, and emergency management, as suggested by Aruru, Truong & Clark 2021. would significantly contribute to health outcomes.

Influenza immunization knowledge (60%) among health workers reflects knowledge of risk of respiratory infection in mass events according to international health guidelines (Gautret, et al 2016).. Detection of other vaccines, such as meningococcal (10%) and pneumococcal (12%), reflects a baseline of vaccine-preventable disease knowledge in high-risk groups . The 18% level of awareness for an integrated vaccination strategy ("All of the above") reflects overall familiarity but, as Yezli et al. noted, room for improvement remains in promoting overall immunization coverage by an individual's personal health profile. Capacity building of healthcare providers regarding the importance of early immunization, especially among high-risk groups such as elderly and those with chronic illnesses, is essential to prevent outbreaks during Hajj and Umrah. The most common conditions reported—diarrhea (59.5%) and flu/cough (58%)—are consistent with previous epidemiological studies highlighting that respiratory and gastrointestinal infections are some of the key causes of morbidity at mass gatherings (Awwad, Mohamoud & Abonazel, 2021). These observations are also consistent with Yezli et al.'s study , which noted the persistence of enteric and respiratory infections in spite of preventive measures. The identification of infections of the skin (30%) is also consistent with the environmental and hygienic issues in overcrowding, as listed by Knapp, Rehmus & Chang 2020.

Even though awareness of vaccination schedules was quite high, with 40% of respondents indicating that they are very knowledgeable, most (18%) were relatively less knowledgeable, and 16% were not knowledgeable at all. The same gaps were ascertained by Williams et al. , who highlighted the need for ongoing education in order to enable healthcare workers to access updated immunization guidelines. As argued by Khan, et al 2024 compulsory training programs should focus on vaccination

timing, procedures, and appropriateness to achieve maximum coverage as well as reduce infectious disease transmission among pilgrims.

Confidence levels in managing chronic disease were variable, with 46% being completely confident but 36% being just somewhat confident and 14% being not prepared. This is reaffirmed by Jacobs, et al 2014 who highlighted that ongoing capacity-building processes like simulation training and workshops are of paramount importance in order to ensure maximum healthcare providers' confidence and capacity for emergency management. Enhancing multidisciplinary teams and ongoing professional development are measures promoted by Jacobs, et al 2014 to ensure quality care and patient safety during Hajj and Umrah.

Finally, the majority of participants (66%) reported in a positive manner engaging in active health education activities, promoting vaccination, hygiene, and adherence to medications—substantial aspects in the prevention of infectious and chronic diseases (Madani, et al 2006). Though, an intriguing minority of 10% hardly or never participate in health education interventions, and this can contribute to closing the gaps in health awareness and adherence.

❖ **Research recommendations**

Based on the outcome of this study, it is apparent that there should be enhanced and modified health training, education, and allocation of resources to the health care workers and organizers who participate in Hajj and Umrah. Following the relatively young and highly educated population with diverse healthcare backgrounds, special training programs must be developed to enhance their ability to manage chronic diseases and emergency cases. A better response in large crowds can be ensured by giving the less experienced medical staff members more ongoing professional training, which will boost their confidence and readiness. Regular simulation exercises, refresher training, and interprofessional seminars can also help to improve teamwork, communication, and protocol sensitivity, particularly in the areas of immunization knowledge and emergency response. Additional

focus should be placed on educating and preparing health workers in fully vaccinating pilgrims with chronic conditions considering the knowledge gaps demonstrated by some participants.

Furthermore, health officials and organizers should have carefully designed campaigns of health promotion emphasizing the importance of pre-travel health checkup, vaccination, hydration, and activity restriction based on age and health. The development of uncomplicated, culturally relevant educational materials and the utilization of electronic media are likely to enhance the health literacy of pilgrims, especially for pilgrims with low baseline knowledge or self-efficacy. Since many of the responders already understand the importance of more training and education, simple, straightforward emergency response and referral procedures should be created to allow for timely, efficient treatment. The health of pilgrims with chronic illnesses will be greatly protected by funding capacity-building initiatives, widely disseminating health information, and providing simple access to immunization and medical care at locations including airports, clinics, and pilgrimage sites. When combined, these initiatives can result in better health outcomes, fewer crises, and a more organized, healthier journey for all parties.

❖ **Strengths and weaknesses**

Strengths:

One of the strengths of this study is that it fills a neglected but important domain of mass events' chronic healthcare delivery—i.e., healthcare providers' knowledge, attitude, and preparedness in dealing with pilgrims' chronic illnesses. Employing a standardized questionnaire facilitated systematic data collection, since they present clear photographs of prevailing practice and attitude. Additionally, the value of the research is enhanced further by the fact that it has the potential to deliver feedback for targeted training and policy programs and ultimately lead to better quality and safety in healthcare for Hajj and Umrah.

Limitations:

There are a few limitations of the study which have to be indicated. The sample was small and from a single geographical area, and the results may not have had great generality to larger populations or other clinical settings. Also, reliance on self-reported data compromises response bias, where patients can overestimate both their knowledge or preparedness. Lastly, the cross-sectional design only measures perceptions and knowledge at a single point in time and is not capable of measuring change over time or the efficacy of interventions in developing healthcare workers' readiness.

Conclusion

This is a cross-sectional study that presents an interesting glimpse of the central involvement of healthcare workers in managing chronic diseases in Hajj and Umrah pilgrims. The study reveals an acceptable overall knowledge and level of awareness regarding common chronic diseases, their symptoms, predisposing risk factors, and control, reflecting the important role played by healthcare workers in ensuring the health of pilgrims. The study also discovers, however, considerable gaps in preparedness and the quantity of training completed, underlining the need for ongoing education and capacity-building programs catering to the special requirements of mass events. While health workers' attitudes and beliefs also show active knowledge of a task, particular training programs, simulated exercises, and well-defined emergency response protocols nevertheless have the ability to boost confidence and methodical preparedness. To rationalize healthcare service, enhance health outcomes, and guarantee a safe and healthy Hajj experience for all pilgrims, it will be essential to close these gaps. In the end, the key to successfully controlling infectious and chronic diseases during large-scale Hajj and Umrah gatherings is the improvement of health personnel' knowledge, attitudes, and readiness.

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Appendix A

Questionnaire

Part 1: Demographic Data

- 1. What is your age group?**
 - a) 20-29 years
 - b) 30-39 years
 - c) 40-49 years
 - d) 50 years and above
- 2. What is your gender?**
 - a) Male
 - b) Female
- 3. What is your highest level of education?**
 - a) High school or less
 - b) Bachelor's degree
 - c) Master's degree or higher
- 4. How many years of experience do you have working in healthcare?**
 - a) Less than 1 year
 - b) 1-5 years
 - c) 6-10 years
 - d) More than 10 years

5. **Which healthcare setting do you primarily work in?**
- a) Hospital (Inpatient/Outpatient)
 - b) Primary healthcare center
 - c) Clinic or private practice
6. **What is your current professional role?**
- a) Pharmacist
 - b) Nurse
 - c) Physician/Doctor
 - d) Health technician or assistant
7. **In which setting do you primarily interact with pilgrims?**
- a) Pharmacy (dispensing medications and counseling)
 - b) Airport (health screening or assistance)
 - c) Pilgrimage site (on-site health services or first aid)

Part 2: Health Knowledge

8. **Which of the following vaccines are recommended for pilgrims before Hajj or Umrah?**
- a) Influenza vaccine
 - b) Meningococcal vaccine

- c) Pneumococcal vaccine
 - d) All of the above
9. **Which of the following is *not* a common health illness that pilgrims may experience during Hajj or Umrah?**
- a) Respiratory infections
 - b) Gastrointestinal illnesses
 - c) Skin infections
 - d) Cardiovascular diseases
10. **Regarding chronic illnesses among pilgrims, which statement is correct?**
- a) Hypertension and diabetes are common and require careful management during pilgrimage
 - b) Chronic illnesses are usually not affected by the pilgrimage activities
 - c) Vaccinations do not play a role in managing chronic illnesses during Hajj and Umrah
 - d) Chronic diseases are rare among pilgrims
11. **How familiar are you with the recommended vaccinations for pilgrims with chronic conditions?**
- a) Very familiar
 - b) Somewhat familiar
 - c) Not very familiar
 - d) Not at all familiar

12. Which of the following best describes your knowledge about managing chronic diseases during mass gatherings?

- a) I am well-informed and confident in managing these conditions
- b) I have some knowledge but need further training
- c) I am not confident in managing these conditions during Hajj/Umrah
- d) I have little to no knowledge on this topic

13. Do you know the recommended actions to take if a pilgrim with a chronic disease experiences an emergency during Hajj or Umrah?

- a) Yes, I am aware of the protocols
- b) Somewhat, but I need more information
- c) No, I am not familiar with specific actions
- d) Not applicable / Not sure

Part 3: Preventative Practices

14. How often do you educate pilgrims about the importance of vaccination and disease prevention before Hajj or Umrah?

- a) Always
- b) Often
- c) Sometimes
- d) Never

- 15. During the pilgrimage, how likely are healthcare professionals to recommend the following to pilgrims with chronic diseases?**
- a) Maintaining medication adherence
 - b) Avoiding strenuous activities during peak heat
 - c) Drinking adequate fluids to prevent dehydration
 - d) All of the above
- 16. What is your usual practice when managing a pilgrim with a chronic illness who reports symptoms of illness?**
- a) Immediate referral to a higher-level facility
 - b) Providing on-site medication and advice
 - c) Monitoring and follow-up later
- 17. How prepared do you feel to handle health emergencies involving chronic diseases during Hajj and Umrah?**
- a) Very prepared
 - b) Somewhat prepared
 - c) Not very prepared
 - d) Not at all prepared
- 18. Do you believe that additional training on managing chronic illnesses during mass gatherings would improve health outcomes?**
- a) Yes, definitely
 - b) Maybe, some training could help

- c) No, current training is sufficient
- d) Not sure

19. How often do you participate in training or workshops related to mass gathering health management?

- a) Regularly
- b) Occasionally
- c) Rarely
- d) Never

Appendix B

Informed Consent Form

Title of the Study: Examining the Role of Healthcare Professionals in Managing Chronic Diseases Among Pilgrims during Hajj and Umrah: A Cross-Sectional Study

Principal Investigator:	[Insert Name]
Institution:	[Insert Institution Name]
Contact Information: [Insert Contact Details]	

Introduction

You are invited to participate in a research study that aims to examine the role of healthcare professionals in managing chronic diseases among pilgrims during Hajj and Umrah. Your participation is voluntary, and you may withdraw at any time without any penalty or loss of benefits.

Purpose of the Study

This study seeks to understand healthcare providers' experiences, knowledge, and practices related to managing chronic diseases during pilgrimage seasons, with the goal of improving health services and outcomes for pilgrims.

What Will You Be Asked to Do

If you agree to participate, you will be asked to complete a questionnaire or participate in an interview regarding your professional role, training, challenges, and practices related to managing chronic diseases during Hajj and Umrah. The process is expected to take approximately [insert estimated time].

Risks and Benefits

There are no significant risks associated with participation in this study. Your responses will contribute to a better understanding of healthcare management during mass gatherings, which may benefit future health planning and training programs.

Confidentiality

All information collected will be kept strictly confidential. Your responses will be anonymized, and any identifying information will be removed prior to analysis and publication. Data will be stored securely and only accessible to the research team.

Voluntary Participation

Your participation is entirely voluntary. You may refuse to participate or withdraw at any time without any negative consequences. Your decision will not affect your current or future relationship with [Institution/Organization].

Contact for Questions

If you have any questions or concerns about the study or your participation, please contact:

[Insert _____ Name]
[Insert Contact Details]

Consent

By signing below, you indicate that you have read and understood the information above, that your questions have been answered satisfactorily, and that you voluntarily agree to participate in this study.

Participant's	Name:	_____
Signature:		_____
Date:		_____

Researcher's	Name:	_____
Signature:		_____
Date:		_____

❖ ملخص

الخلفية: تُشكّل التجمعات البشرية، كالحج والعمرة، تحدياتٍ فريدةً لأنظمة الرعاية الصحية، لا سيما في إدارة الأمراض المزمنة لدى الحجاج. ويلعب أخصائيو الرعاية الصحية دورًا حاسمًا في ضمان فعالية إدارة الأمراض والاستجابة للطوارئ، إلا أن معارفهم ومواقفهم واستعدادهم تتطلب مزيدًا من التقييم

الهدف: تهدف هذه الدراسة إلى تقييم معارف ووعي أخصائيي الرعاية الصحية بالأمراض المزمنة الشائعة لدى الحجاج، ودراسة مواقفهم وتصوراتهم حول أدوارهم، وتقييم مستوى استعدادهم وتدريبهم على إدارة الطوارئ الصحية أثناء الحج والعمرة .

المنهجية: أُجري مسحٌ مقطعيٌّ على 50 أخصائي رعاية صحية مُشاركين في خدمات الرعاية الصحية للتجمعات البشرية. جُمعت البيانات باستخدام استبيانات مُهيكلّة لتقييم المعرفة والمواقف والتصورات والتدريب المتعلق بإدارة الأمراض المزمنة والاستعداد للطوارئ. واستُخدمت الإحصاءات الوصفية والأساليب التحليلية لتفسير النتائج

النتائج: أشارت النتائج إلى مستوى جيدٍ بشكل عام من المعرفة والوعي بالأمراض المزمنة الشائعة، حيث أبدى أكثر من نصف المشاركين ثقةً في إدارة هذه الحالات. ومع ذلك، وُجدت فجوات كبيرة في التدريب والاستعداد، حيث أفاد 54% فقط من المشاركين في التعليم المستمر. وأقرّ معظم العاملين في مجال الرعاية الصحية بدورهم الحيوي، إلا أن الكثيرين أعربوا عن الحاجة إلى تدريب مُعزّز وبروتوكولات مُنظمة لتحسين القدرة على الاستجابة للطوارئ .

الخلاصة: في حين يُظهر العاملون في مجال الرعاية الصحية معرفةً كافيةً ومواقفٍ إيجابية تجاه إدارة الأمراض المزمنة أثناء الحج والعمرة، إلا أن هناك حاجةً مُلحةً لتحسين تدريبهم واستعدادهم .

ويُعدّ تنفيذ برامج تعليمية مُحدّدة، وتمارين محاكاة، وإرشادات طوارئ واضحة، أمرًا أساسيًا لتحسين تقديم الرعاية الصحية وحماية صحة الحجاج خلال هذه التجمعات الحاشدة.

Abstract

Background:

Mass gatherings like Hajj and Umrah pose unique challenges for healthcare systems, particularly in managing chronic diseases among pilgrims. Healthcare professionals play a crucial role in ensuring effective disease management and emergency response, yet their knowledge, attitudes, and preparedness require further assessment.

Aim:

This study aims to evaluate the knowledge and awareness of healthcare professionals regarding common chronic illnesses in pilgrims, examine their attitudes and perceptions about their roles, and assess their level of preparedness and training for managing health emergencies during Hajj and Umrah.

Method:

A cross-sectional survey was conducted among 50 healthcare professionals involved in mass gathering healthcare services. Data were collected using structured questionnaires assessing knowledge, attitudes, perceptions, and training related to chronic disease management and emergency preparedness. Descriptive statistics and analytical methods were employed to interpret the findings.

Results:

The results indicated a generally good level of knowledge and awareness about common chronic illnesses, with over half of participants confident in managing such conditions. However, significant gaps were identified in training and preparedness, with only 54%

reporting participation in ongoing education. Most healthcare professionals recognized their vital role, but many expressed the need for enhanced training and structured protocols to improve emergency response capacity.

Conclusion:

While healthcare professionals demonstrate adequate knowledge and positive attitudes toward managing chronic diseases during Hajj and Umrah, there is a pressing need to improve their training and preparedness. Implementing targeted educational programs, simulation exercises, and clear emergency guidelines are essential to optimize healthcare delivery and safeguard pilgrims' health during these mass gatherings.