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Review Article

Anthropological commentary on COVID-19 vaccine hesitancy: a Bangladesh perspective

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ABSTRACT

From a Bangladeshi perspective, this commentary discusses the problem of vaccine hesitancy (VH) and its outcome within the Bangladeshi population, including minority ethnic groups. Relatively low vaccination rates among the Bangladeshi population are associated with people's social and economic conditions and are the focus of public health activities and regulations in the broader region. This short commentary uses examples from minority ethnic groups in Bangladesh, including tribal groups, to address three main objectives. First, the need to understand better population management over vaccine outcomes and efforts to minimise overlooking the minority ethnic population. This understanding can assist in overcoming the reluctance of VH among the Bangladeshi people in a trusted and sustainable manner. Secondly, being part of a more comprehensive rethinking of public health interactions with minority ethnic populations, this commentary promotes exploring the epidemiological context of the VH rate among the Bangladeshi people. This paper proposes strengthening the credibility of vaccinations rather than recommending measures to encourage vaccine coverage in Bangladesh. Finally, it emphasises how crucial it is to interact with minority ethnic groups in the context of the new public health preparation strategies following Bangladeshi VH concepts. This article examines survey data and secondary information. PubMed and Google Scholar identified literature reviews to support the proof for exploring the possible concerns regarding VH among the Bangladeshi population.

Keywords: Minority ethnic groups, Public health, Bangladesh, Vaccination hesitancy

INTRODUCTION

There are inconsistencies in defining VH.[1] The world health organisation (WHO) expert group on immunisation defines VH as; '*VH refers to a delay in acceptance or refusal of vaccination despite the availability of vaccination services. VH is complex and context-specific, varying across time, place, and vaccines. It is influenced by factors such as complacency, convenience and confidence*'.[2]

MacDonald argue that VH varies over time, place, and vaccines are multifaceted and context-dependent.[2] Key terms such as complacency, convenience and confidence may be considered within the broader paradigm of VH. In 2019 the WHO recognised VH as among the top ten challenges to world health.[3] The current COVID-19 pandemic made VH research a priority for public health and the social sciences. Surprisingly, with a considerable number of deaths due to COVID-19, developed European states still have a wide prevalence of VH. A European study showed that the prevalence rate of COVID-19 VH varied from 6.4% to 61.8% among the adult population .[4] On the contrary, there is a higher acceptance of the COVID-19 vaccine in urban regions such as London (70%), New York City (71%), Sydney (72%), Phoenix (76%), and Melbourne (78%) residents.[5] VH is particularly problematic in developing countries for several reasons, including trust in governments handling vaccine rollout.[6] Bangladesh recently moved from being

considered underdeveloped to a developing nation status. This commentary will focus on understanding the COVID-19 VH within Bangladesh and explore the gaps in VH responses in Bangladesh.

Timeline of VH

Whenever it comes to vaccine acceptance or hesitancy, timing is everything. Even though VH is variable, new modes of analysis are required to characterise its temporal and spatial (e.g., regional) features, numerous behavioural manifestations, and effects on vaccine uptake.[7] The first recorded law compelling immunisation was enacted in Massachusetts, USA, in 1809, requiring the general population to get the smallpox vaccine.[8] As more countries passed legislation along the same lines, opposition grew.[9] Haelle states that anti-vaccination sentiment increased and spread throughout Europe until an 1885 rally in Leicester, England, attended by nearly 100,000 people. This event led to the British monarchy appointing a commission to investigate the matter.[10]

Bangladesh has a long history of immunisation success and has reached high vaccination coverage against avoidable diseases. Nevertheless, the crude vaccination coverage is dependent only on the number of children in a specific age cohort (12-23 months) who have had vaccinations; it does not reflect the continuation of recommended scheduled vaccinations.[11] Unfortunately, a detailed history of VH in Bangladesh is unknown.

Over the past two years, substantial research has examined the COVID-19 pandemic and vaccination against the Corona virus. A recent cross-sectional study of 1134 patients in Bangladesh found the prevalence rate of VH to be 32.5%.[12] On the other hand, another cross-sectional survey portrayed the COVID-19 VH prevalence rate as 46.2%.[13] Apparent differences in the prevalence of VH suggest that further exploration into the causes of VH among the Bangladeshi population is needed.

Critical discussion on models of VH

A variety of theories highlight the variation in vaccine-hesitant people and show how and why the numerous ecological elements impact vaccine decision-making. These theories draw from behavioural science, bioethics, and economics.[14] Several models explore variations in VH. The SAGE working group's 3C (Confidence, complacency, convenience) model is an easily understood method explaining the determinants of VH. The model classifies the causes of VH into three groups; where individuals who lack confidence in the vaccine, are complacent about it, and unnecessarily find vaccination inconvenient in their lives.[15]

On the other hand, the 5C model proposes two more determinants; calculation (the pros and cons of vaccination) and collective responsibility (taking the vaccine as a community good).[16] One drawback of these two models is that both fail to determine the causes behind VH. A health belief model somewhat better explains the reasons behind VH by explaining an individual's perception of a particular vaccine.[17] This paper considers that combining the health belief and the 3C model better explains the community-level scenario regarding VH. Here, we propose a causality model of VH that explains wider social determinants (Figure 1).

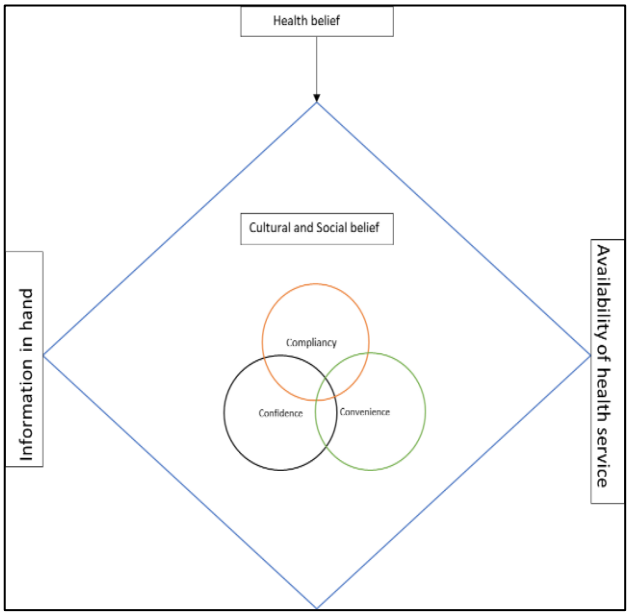

Figure 1: A causal model of VH.

Proposed a model for VH

The proposed model considers complacency as determined or influenced by an individual's health beliefs.[18] As argued by Zhang et al confidence in certain things, such as VH, is triggered by the lack of information or knowledge, and the availability of immunisation programmes drives convenience. All the 3C's (Compliancy, confidence and convenience) are subject to cultural and social norms. Understanding the broader social determinants is vital to find the root cause explained through this proposed model.

METHODOLOGY USED

The authors conducted a peered reviewed search using the SCOPUS database. The keywords considered for this search are (Table 1).

Table 1: Keyword Search.

COVID-19	Vaccine	Hesitancy
SARS-COV-2	Immunisation	Reluctance
Coronavirus		Refusal

Thirty-eight peer-reviewed articles emerged, with 22 published in 2021 and 16 in 2022. We consider that the grey areas of VH research need outlining and addressing.

Among the 38 studies, 82.1% are quantitative and mix-method based primary studies, letters to the editor 2.6%, editorials 2.6%, 5.1% per cent published as notes, and 7.7% are review articles with most conducted by Dhaka university. So far, the research utilises semi-structured questionnaires, which were interpreted and analysed with a quantitative approach and three mixed-method studies. Lack of qualitative VH research (in-depth interviews, focus group discussions) may mislead or provide incomplete information about the social determinants of VH. Most cross-sectional surveys are online, excluding non-internet users and no nationwide VH surveys.

DISCUSSION

COVID-19 VH and Bangladesh

Mass COVID-19 vaccination started in Bangladesh on February 7 2021.[19] A study by Hossain et al considers that knowledge about vaccine criteria, vaccine development and people's behavioural practice might be key determinates for developing VH.[20] A survey of healthcare professionals shows that less than 50% are willing to take the vaccine.[22] Another study regarding the knowledge attitude and practice regarding COVID VH shows that younger people, farmers and residents living in rural areas with minimal education are more reluctant to get immunised.[23] In Bangladesh, VH and rejection incidences were prevalent among people in rural areas and slum dwellers. Low levels of literacy, poor adherence to health safety laws, and low levels of trust in the healthcare system are VH factors among the rural community and slum inhabitants. The ongoing app-based registration for vaccinations increased scepticism and resistance in the group of people with poor education.[24]

Technology here is considered a cause for VH due to a lack of knowledge and poor policy formation.[25] A study among Bangladeshi, Indian and Pakistani people considered two critical factors for developing VH; fake news and religious belief.[26] While the Bangladesh government started a mass vaccination programme for COVID-19 in early February 2021, a study conducted between April 2021 and August 2021 showed that 53.9% of the population believed mass vaccination could not control the Covid pandemic.[27] Bangladesh has diverse tribal or minority ethnic people, and no extensive VH study exists among these populations. Tribal population VH rates might be a way to understand how cultural and social beliefs determine the vaccine acceptance rate.

COVID VH and grey literature in Bangladesh

Mohsin et al conducted a cross-sectional study in Bangladesh to explore why VH focuses on the side effects of the COVID-19 with vaccines administered in Bangladesh. Participants in the trial were 12 years of age and older and had received at least one dose of the COVID-19 vaccination. The trial included 1,180 vaccine recipients; only 39.48% of those who received the COVID-19 vaccine reported experiencing adverse effects. However, the most frequent side effects were minor and persisted for 1-3 days, including injection-site soreness, fever, headaches, redness/swelling at the injection site, and tiredness. Moreover, this study concluded that low incidences of COVID-19 vaccination side effects proved their safety, and publicising these results could promote vaccine adoption.[28] However, this study could not establish the reasons for the VH rate in minority groups. In light of this recommendation, another cross-sectional study predicted that despite the evidence of the safety and effectiveness of COVID-19 vaccines, universal vaccination among Bangladeshi populations is still problematic.[29] A household survey of 3646 adults 18 years or older identified the effects of socioeconomic, physiological, and healthcare-related factors on people's hesitation and resistance to receiving the COVID-19 vaccine. A multivariate regression analysis identified that when a safe and effective COVID-19 vaccination was available, 74.6% of participants were willing to have it. In contrast, 8.5% were hesitant.[30]

Additionally, VH was prevalent among the elderly, the undereducated, contract labourers, those with chronic illnesses, and those with low confidence in the nation's healthcare system. At the same time, the app-based vaccination registration raised reluctance and resistance in the group of people with poor education. However, this study could not explore how this software impacts the VH rate. Looking forward to further studies conducted in Bangladesh focusing on VH, a cross-sectional survey among children with neurodevelopmental disorders looked for the approximate percentage of Bangladeshis who are hesitant to receive the COVID-19 vaccines. The results of this study noted that a higher VH rate among families living with the neurodevelopmental disorder is due to safety concerns in Bangladesh.[31] This article also mentioned that only the safety concern is the cause of VH. Nevertheless, this study did not elucidate the reason for the safety concerns.

Another study on the psychological determinants of COVID vaccine acceptance rate among urban slum dwellers of Bangladesh showed a high vaccine acceptance level. Patwarey and colleagues stated that complacency (OR=3.97; p=0.001) and group responsibility (OR=0.23; p=0.001) were two psychological factors strongly linked to the vaccine acceptance rate. So far, no studies have been conducted on the psychological determinants to explore the VH rate among the broader population of Bangladesh, especially the tribal groups.[32] In most of the conducted studies, issues with the tribal population are absent, demonstrating that VH has wider social determinants, such as education, culture, and religion, that vary in different communities. In addition, the studies conducted among the Bangladeshi population did not explore the ethnic minority groups that pose a broader portion of diverse Bangladeshi culture. At the same time, no prediction-formulated model for the COVID VH rate exists as far as our search is concerned.

Minority ethnic population in Bangladesh and VH

With 166.2 million people, the nation has the eighth-highest population in the world. Islam is the most common religion, and Bengali is the official language. However, some religions have dialects, and many minority ethnic groups exist here in minimal numbers. The ethnic groups are Bihari (0.3%), Chakma (0.3%), Meitei (0.1%), Khasi (0.1%), Santhal (0.1%), Garo (0.1%), Oraon (0.1%), Munda (0.1%), Rohingya (0.1%).[33] We must recognise and address these minority ethnic groups in adopting the COVID-19 vaccine considering the widespread vaccination campaigns. However, surveys have shown that persons from minority ethnic groups have substantially greater VH. According to our literature search, no study regarding COVID-19 VH among minority ethnic groups is underway in Bangladesh.

Only one study conducted over three tribal people of Bangladesh regarding COVID-19 knowledge attitude and practice shows that 87.0% Chakma, 85.0% Marma, and 81.1% Tripura are aware of the viral disease COVID-19, and 54.2%, 53.8%, and 60.4% of the Chakma, Marma, and Tripura populations, respectively, believe that COVID-19 is a fatal illness. About 87% of Chakma, 85% of Marma, as well as the 81.1% of Tripura used face masks as a safety measure. However, hand sanitiser or soap was lower in use as a safety measure than face mask use. Nevertheless, the tribal ethnic population were eager to have a vaccination during the pandemic; at that time, they did not believe in the effectiveness of the immunisation.[34]

Moreover, lacking faith in vaccine advantages is critical in developing VH.[35] A grey area in VH research in Bangladesh is to overlook its minority ethnic population or the tribal population. Looking at other countries' studies, a comparative study between black and white people of ethnic origin in the USA identified black people as having more VH rates than their white counterparts.[36] Lopes and Munana's work portrays that 39% of the black population was worried about the vaccine's safety, which is 9% higher than the white population. Regarding trust, the black population has higher distrust (35%), much lower than their white counterparts (23%).

Scenarios in the Rohingya population

Around 900,000 Rohingya refugees who had escaped the 2017 massacre in Myanmar were COVID-19 vaccinated in Bangladesh with the assistance of the WHO. Volunteers working in Rohingya health camps have played a crucial role in delivering health-related information, collaborating with local authorities, and accompanying older adults during a pandemic. More than 86% of the targeted group (those 55 and older) had received at least one dose by September 2021.[37] No data exist regarding the Rohingya population below the age group of 55.

CONCLUSION

This anthropological commentary has tried to explore the gaps in the previous studies and aims to add to the evidence by looking for the possible causes of VH among the Bangladeshi population. This review also explained the importance of the view of the ethnic minority population in VH. Moreover, it has proposed a model to critically evaluate the previous theoretical models that show more study clarity. Continuing this study, we will systematically review the previous studies focusing on the grey areas.

COVID-19 VH needs understanding at an individual level rather than a more comprehensive global perspective. Personal differences remain between every individual, so determinants related to COVID-19 VH will differ. A global social scale must help determine COVID-19 VH. Though it is too early to lay down a timeline for COVID-19 VH, developing a predictor model to address the wider social determinants leading to VH is essential. A country like Bangladesh, with a high density of diverse population dynamics and recent economic development, may be considered for a predictor model for VH study.

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