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Prospect of Future Vaccination Through The Lens of Geriatric Population: A Structural Equation Model Approach Based on The COVID-19 Vaccine

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Abstract

This study explores the perceptions and experiences of the geriatric population in the Mokokchung district, Nagaland, North East India, regarding COVID-19 vaccination and their willingness to participate in future vaccination drives. Using a Structural Equation Model (SEM), the research assessed five variables: Experience, Hospitality, Perception, Satisfaction, and Future vaccination. Findings revealed that satisfaction with the vaccination process had the most significant positive correlation with the older population's future willingness to participate (0.575), followed by the influence of hospitality on their vaccination experience (0.257). Perception of COVID-19 and its vaccination moderately influenced vaccination experience (0.176). The correlation between experience and satisfaction (0.051) was statistically insignificant ($p = 0.681$). The study emphasizes the importance of creating a healthy neighbourhood, encouraging social participation, and fostering supportive living arrangements for older adults. Addressing vaccine misconceptions and providing reliable information are essential to boost confidence in vaccination. Policymakers and healthcare providers should consider these factors to ensure a supportive environment for the elderly and promote preventive behavioural traits. Despite some limitations, these insights contribute to a healthier, more resilient community facing future health challenges.

Keywords: SEM, North-East India, COVID-19 perception, Gerontology.

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INTRODUCTION

According to the Institute of Gerontology at the University of Georgia, Gerontology is a multidisciplinary scientific inquiry focused on comprehending the intricacies of the aging process. Its primary objective is to gain insight into the various phenomena and challenges of the elderly population, aiming to enhance their overall quality of life. Understanding older adults' vulnerability is necessary for physical and social reasons (World Economic Forum, March 12, 2020). Aging is linked with various biological changes with considerably weak immunity related to age-related illnesses and susceptibility to infectious diseases (Bajaj et al. 2021, 2). Meanwhile, the novel coronavirus, commonly known as COVID-19 or SARS-CoV-2, garnered considerable notoriety for its impact worldwide. This respiratory syndrome has created profound disruptions, affected countless lives, and caused global turmoil (Muralidar et al. 2020, 86). Blake and Divyanshi report that due to the pandemic, socio-economic hardships,

escalating poverty rates, economic downturns, escalated healthcare expenditures, educational transformations, and a pronounced digital divide have emerged (World Bank Group, December 14, 2020).

However, a significant twist in this unfolding narrative is the pivotal role played by age in this formidable contagion. Global evidence substantiates that advancing age constitutes a pronounced risk factor for severe COVID-19 and its associated deleterious health outcomes. This assertion is reinforced by the chillingly high case fatality ratios (CFR) reported among patients in their 70s and 80s, which stand at 12.8%-20.2%, contrasting starkly with the comparatively nominal 0.4% CFR observed among individuals aged 40 and below (Onder et al. 2020, 1776). The heightened susceptibility of the elderly population to infection is due to an age-related immunological remodelling process, compounded by chronic conditions and comorbidities (Lim et al. 2020, 549). Consequently, the vulnerability of the aged demographic is starkly accentuated (Li et al. 2011, 466; Pawelec 2018, 4). Moreover, the domicile-bound older populace faces an augmented mortality risk, adding another layer of complexity to the prevailing situation (Nilsson et al. 2021, 2). Additionally, the issue of vaccine hesitancy presents a vexing challenge, impacting the safeguarding of vulnerable older adults through vaccination initiatives. The World Health Organization (WHO) categorizes vaccine hesitancy into three dimensions - confidence, complacency, and convenience - further complicating efforts to implement comprehensive vaccination drives (WHO, August 18, 2015). An in-depth comprehension of the perceptions and beliefs of this population is thus imperative for devising effective vaccination programs catered to the geriatric cohort.

Adopting the structural equation model (SEM) as an analytical tool reinforces the research resourcefulness. SEM offers a robust mechanism to explain intricate relationships between multiple variables and latent constructs, unveiling insights into latent variables within the observable data (Sadia et al. 2018, 21). By employing factor analysis, confirmatory factor analysis, and path analysis, SEM facilitates the estimation of latent variables by examining various observed variables (Martynova et al. 2018, 325). Thus, SEM provides a robust methodological foundation for formulating hypotheses based on theoretical constructs or empirical observations (Iacobucci 2009, 673). Given the critical vulnerability of the geriatric population, the present study proposes a hypothetical model to explore the interplay of diverse influential factors and offer relevant recommendations to fortify future vaccination endeavours within this demographic. The research attempts to achieve the following:

1. To analyze the Geriatric population's insight of COVID-19 and its vaccination.
2. Development of an SEM to aid in future vaccination drives.
3. To provide recommendations and measures for improvement in further vaccination.

METHODOLOGY

Significance of the study: In contemporary society, older individuals often find themselves marginalized and viewed as burdensome or economically draining for those still in the workforce. The aging process is often met with discomfort and perceived as a sign of weakness, leading to efforts to slow down or disregard its natural course despite older adults' significant societal importance and contributions (Onyenemezu & Olumati 2013, 151).

The COVID-19 pandemic has impacted humanity irrespective of age; however, according to a UN report, the older population has been notably more susceptible than other age groups. This heightened vulnerability is primarily attributed to their higher prevalence of comorbidities and weakened immunity (Dhama et al. 2020, 2938). The pandemic's sweeping changes in daily life, such as social isolation, heightened emphasis on hygiene, disruption of physical activities, promotion of digital technologies, and various other readjustments, have adversely affected the health and well-being of the elderly population (Jaarsveld 2020, 2). Given these circumstances, safeguarding the older generation becomes paramount, and vaccination emerges as a crucial tool. Mass vaccination is a practical approach to curbing the virus's rapid spread (Cohen 2020, 2018). To achieve this, assessing community-level hospitality, perceptions surrounding vaccination, past experiences, and overall satisfaction with the vaccination process is vital. Understanding the strengths and limitations within the current context will pave the way for a more efficient and effective vaccination process moving forward.

Study Area: Mokokchung district in Nagaland was selected as the study area. According to the 2011 census, the district encompasses 108 villages and is characterized by its physiographic features, which consist of six distinct hills. The district is bordered by Tuensang and Longleng districts to the east, Wokha district to the west, Zunheboto district to the south, and the state of Assam to the north

Sampling Procedure: The villages for the study were chosen utilizing a cluster sampling technique. The entire population was divided into sections or clusters based on specific demographic parameters, namely villages with the highest number of households according to the 2011 census, explicitly targeting participants aged 60 years and above. The selected villages included Ungma, with 2294 households; Chuchuyimpang, with 853 households; Mangmetong, with 775 households; and Longsa, with 772 households, respectively. The snowball sampling technique was employed to identify the respondents for the study. This method involves identifying initial participants who fit the required criteria and then asking them to refer or nominate other potential participants who meet the study's eligibility criteria. This process continues iteratively, creating a chain of referrals until the desired sample size is achieved.

Sample size: 200 respondents aged 60 years and above were selected for the study, irrespective of gender, occupation, personal status, or health condition. The sample was drawn from four villages, with an equal representation of 50 respondents from each selected village.

Tools of data collection: The research drew upon secondary data sources, comprising books, articles, official reports, documentation, and various written records. These resources provided valuable information and insights for the study. A set of interview schedules was meticulously crafted for primary data collection, considering that many of the targeted respondents were illiterate. The interviews were based on the selected questionnaires. Moreover, to enhance the accuracy and comprehensiveness of the data collected during the interviews, modern technological aids such as mobile phone cameras and audio recorders were utilized. These tools were crucial in capturing visual and auditory elements, ensuring no valuable information was overlooked or lost during data collection.

Data analysis: Data analysis was performed by

the Statistical Package for Social Sciences (SPSS version 26.0) and the Analysis of Moment Structure (AMOS version 21.0.)

RESULTS

Profile of respondents: 93 male and 107 female respondents were recorded during the study. Among these participants, the majority identified as farmers, constituting 158 individuals, while the remaining 42 were pensioners. Regarding the COVID-19 vaccination, it was noted that 180 respondents had willingly undergone the vaccination process, indicating their acceptance of the vaccination drive. On the other hand, 20 respondents chose to refuse participation in the vaccination initiative. The age range of the participants varied from 60 to 98 years, with a calculated mean age of 74.6 ± 8.8. Notably, the respondents' educational background predominantly fell within the "No education" and "Class VII" standard levels, as illustrated in **Figure 1**.

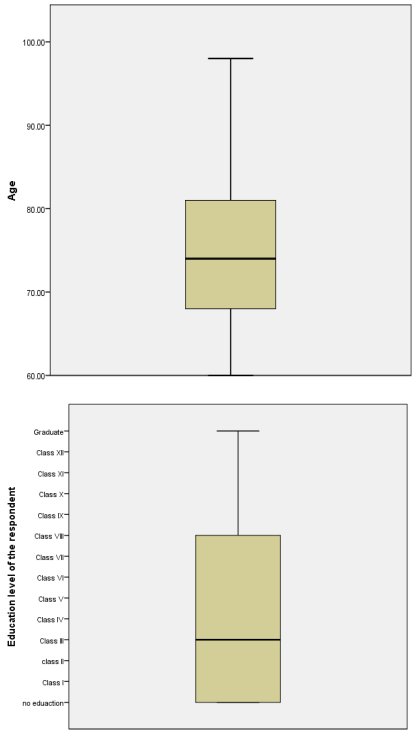

Figure 1: Age spectrum and education level of the respondent

Exploratory factor analysis: Factor analysis is a powerful tool to simplify a relatively complex dataset with numerous variables by creating a smaller set of factors. Before the factor analysis, the data underwent the Kaiser-Meyer-Olkin (KMO) and Bartlett's tests to assess their significance and appropriateness. **Table 1** displays the results of the KMO and Bartlett's Test, with higher values indicating greater suitability for factor analysis. Concerning the geriatric population's perception of future vaccination, the KMO measure of sampling adequacy (MSA) is 0.733, and Bartlett's test of sphericity is significant (Chi-square= 1891.232, $p<0.001$). The factors were extracted using Oblimin rotation with Kaiser Normalization, resulting in a 5-factor solution (**Table 2**), demonstrating a good factor solution in the output. To achieve a favourable factor solution, each variable should exhibit high loadings on one factor and low loadings on all other factors in the matrix (Ajai & Sanjaya 2006, 143).

Based on the five principal components extracted, the five variables were named as follows:

1. Perception of COVID-19 and vaccination among the geriatric population
2. Hospitality received by the geriatric population in their environment
3. Experience of the geriatric population during the vaccination drive and in their environment
4. Satisfaction among the geriatric population during the vaccination drives and from their environment
5. Future willingness to participate in vaccination drives

Using these five variables, a set of hypotheses was formulated (**Table 3),** and a hypothesized model was proposed (**Fig. 2**). This model aims to elucidate the relationships between the identified

variables and provide insights into the geriatric population's perception and attitudes towards future vaccination initiatives.

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.733
Bartlett's Test of Sphericity	Approx. Chi-Square	1891.232
	Df	171
	Sig.	.001

Table 2: Structure Matrix

	Components				
	1	2	3	4	5
H3	.942				
H2	.906				
H4	.888				
H1	.854				
S2		.811			
S1		.804			
S4		.803			
S3		.711			
P3			.818		
P4			.796		
P2			.791		
P1			.715		
E2				.861	
E4				.856	
E3				.768	
E1				.754	
F4					.867
F5					.619

Table 3: Hypothesis framed

H1 Hospitality Influences Experiences
H2 Perception influences Experiences
H3 Experiences Influence Satisfaction
H4 Satisfaction Influences Future

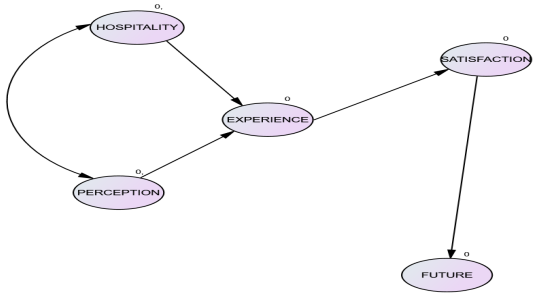

Figure 2: Hypothesized relationship of the SEM model

Construct reliability: To assess the reliability of the five measures utilized in the study, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE) were calculated and presented in **Table 4**. Given that Likert-type scales were used in the questionnaire, Cronbach's alpha coefficient was employed, in line with the recommendation by Joseph and Rosemary (2003) for assessing reliability and consistency in such cases. The Cronbach's alpha scores for all the variables exceeded 0.7, indicating the questionnaire's high reliability and internal consistency (Wang et al. 2019, 5). This demonstrates that the items within each construct are highly correlated, ensuring the robustness of the measurement scales. CR was also computed for all the measures, and the results surpassed the threshold value of 0.60, as suggested by Fornell and Larcker (1981, 39). The CR value above 0.60 indicates that the measurement model is reliable, and it can be inferred that the constructs accurately measure the underlying latent factors. Although the average variance extracted (AVE) values were lower than the recommended threshold of 0.5; it is crucial to consider that all five constructs exhibited CR values well above the recommended level of 0.60 (Long, 2012, 1331). As Fornell and Larcker (1981, 39) propose, AVE may be a conservative estimate, and researchers may conclude construct validity based on the higher CR values. In summary, the results of Cronbach's alpha and composite reliability support the reliability and internal consistency of the measurement scales used in the study. While AVE values were lower than the recommended threshold, the high CR values provide confidence in the reliability and validity of the constructs.

Table 4: Construct reliability

Variables	**AVE**	**CR**	**Cronbach's Alpha**
Hospitality	0.751	0.923	0.920
Perception	0.487	0.790	0.786
Experience	0.562	0.833	0.831
Satisfaction	0.495	0.796	0.800
Future	0.485	0.780	0.752

SEM fit assessment: To evaluate the model fit, several model-fit indices were examined, including Chi-square/degrees of freedom (χ^2/df), comparative fit index (CFI), goodness of fit index (GFI), incremental fit index (IFI), Tucker Lewis index (TLI), and root mean square error of approximation (RMSEA), as presented in **Table 5**. It was observed that the Chi-square statistics

yielded a p-value of <0.01, indicating a lack of good fit. However, Schumaker and Lomax (1996, 125) assert that for sample sizes of 200 or larger, the Chi-Square statistics may be affected, rendering a significant probability level unattainable. Given that the sample size in the present study was 200, reliance solely on the Chi-square statistics for model fit evaluation may not be appropriate. As a more comprehensive approach, other model-fit indices were taken into account. Upon further interpretation, it was found that all observed values of CFI, GFI, IFI, TLI, and RMSEA fell well within the recommended ranges, suggesting an adequate model fit. These indices provide further assurance that the proposed model appropriately represents the relationships between the variables and aligns well with the collected data. Considering the limitations of the Chi-square statistics for larger sample sizes, the combination of other model-fit indices supports the conclusion that the model demonstrates a satisfactory fit to the data in the present study.

Table 5: Model fit indices

Fit Indices	CFA	SEM	Suggested value
Chi-square	225.913(p=0.00) DF-125	233.635(p=0.00) Df- 130	p-value >0.05
Chi-square/degree of freedom (x2 /d.f.)	1.807	1.797	≤ 5.00 (Hair *et al*., 1998)
Comparative Fit index (CFI)	.936	.934	>0.90 (Hu and Bentler, 1999)
Goodness of Fit Index (GFI)	.909	.906	>0.90 (Hair *et al*., 2006)
Incremental Fit Index (IFI)	.937	.935	Approaches 1
Tucker Lewis Index (TLI)	.912	.913	≥ 0.90 (Hair *et al*., 1998)
Root mean square error of approximation (RMSEA)	.064	.063	< 0.08 (Hair *et a*l., 2006)

Pathway analysis and SEM

SEM variables: The pathway analysis is presented in Figure 3. Following are the SEM variables

Observed, endogenous variable:

1. Experience: Participants indicated their experience on a five-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strong Agree). (e.g., I have previous experience with vaccination)
2. Satisfaction: Participants indicated their Satisfaction on a five-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strong Agree). (e.g., Satisfied with the neighbourhood)
3. Future: Participants indicated their Future on a five-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strong Agree). (e.g., Willing to get a vaccination in the future)

Observed exogenous

4. Hospitality: Participants indicated their Hospitality on a five-point Likert scale (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strong Agree). (e.g., I feel secure in the neighbourhood that I reside in)
5. Perception: Participants indicated their Perception on a five-point Likert scale (1=Strongly Disagree, 2=Disagree,

3 = Neutral, 4 = Agree, and 5 = Strong Agree).

(e.g., Vaccination curbs the spread of the virus)

Unobserved exogenous variables

1. e23: Error term for Experience
2. e24: Error term for Satisfaction
3. e25: Error term for Future

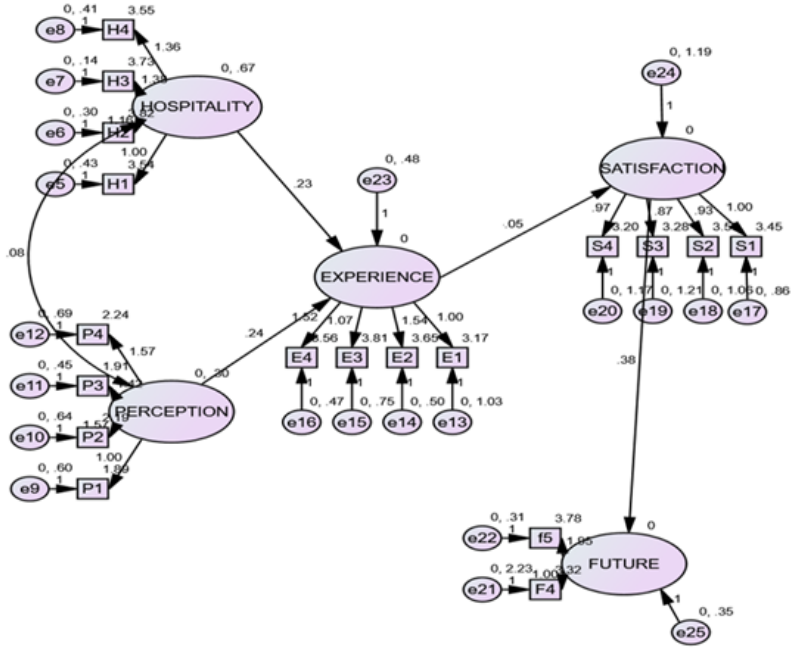

Figure 3: SEM model

Table 6: Variables in the Structural Equation Model Analysis

Variables			Unstandardized co-efficient (B)	S.E of B	Standardized co-efficient (B)	t value	p value
Experience	<---	Hospitality	0.232	0.074	0.257	3.125	0.002
Experience	<---	Perception	0.239	0.118	0.176	2.026	0.043
Satisfaction	<---	Experience	0.051	0.124	0.035	0.412	0.681
Future	<---	Satisfaction	0.380	0.120	0.575	3.166	0.002

Based on the information presented in **Table 6**, the following observations are made: The path coefficient of Hospitality on Experience is 0.232. This indicates that Experience would increase by 0.232 for every unit increase in Hospitality, and the relationship is highly statistically significant (p = 0.002). The path coefficient of Perception on Experience is 0.239. This means that Experience would increase by 0.239

for every unit increase in Perception, and the relationship is moderately statistically significant (p = 0.043). The path coefficient of Experience on Satisfaction is 0.051, indicating that Satisfaction would increase by 0.051 for every unit increase in Experience. However, this relationship is not statistically significant (p = 0.681). The path coefficient of Satisfaction on Future vaccination is 0.380. This implies that Future vaccination tendency would increase by 0.380 for every unit increase in Satisfaction, and this relationship is highly significant (p = 0.002).

Based on these findings, hypotheses H1 (Hospitality → Experience), H2 (Perception → Experience), and H4 (Satisfaction → Future vaccination) are accepted (Table 7). Furthermore, the standardized coefficients provide insights into the relative influence of each path in the structural equation model. Satisfaction of the older population is found to have the most significant impact (0.575) on Future vaccination, followed by Hospitality received influencing Experience (0.257). Perception of COVID-19 and its vaccination has a relatively lower influence on Experience (0.176), and lastly, Experience is observed to have the least impact on Satisfaction (0.035). In conclusion, satisfaction emerges as the most influential factor in this structural equation model, followed by hospitality. These findings highlight the significance of satisfaction in shaping the future vaccination tendencies of the older population.

Table 7: Hypothesis

H-I Hospitality influences experiences	Accepted
H-II Perception influences experiences	Accepted
H-III Experiences influences satisfaction	Rejected
H-IV Satisfaction influences future	Accepted

DISCUSSION

This study represents the first attempt to construct a Structural Equation Model (SEM) based on COVID-19 vaccination for the geriatric population residing in the Mokokchung district of Nagaland. The significance of this research lies in recognizing the crucial role that every individual in society, including the elderly, plays, as emphasized by Kapur (2018, 1). The study specifically focuses on the vulnerable geriatric population amidst the prevailing COVID-19 scenario, aiming to create a society that values and empathizes with older adults, as Soto-Perez-de-Celis advocates (2020, 2). The findings reveal that although most of the aging population in the study received vaccination, a minority remained undecided about participating in the vaccination drive. According to a UN report (2020, 7), elderly individuals locked down and quarantined with caretakers or family members faced abuse, violence, and neglect, significantly impacting their pandemic experience. Conversely, co-residing with supportive peers or engaging in social activities increased well-being among older adults (Djundeva et al. 2019, 1411). Social contact is vital in reducing perceived isolation among older adults (Wu & Chan 2012, 7). Thus, a robust association exists between the aging population's social participation and the socio-physical neighbourhood, which promotes their well-being and encourages participation in activities (Hwang & Sim 2021, 10). Creating a favourable environment accompanied by social leisure activities was essential for increasing the well-being of older adults in a community. The exacerbation of social isolation during the COVID-19 pandemic has profoundly affected the mental and emotional well-being of older adults, potentially affecting their vaccination decisions (Hwang et al. 2020, 1). Therefore, the importance

of family dynamics and the role of social support networks also emerged as significant sociological influencers of vaccine acceptance (Al-Ghuraibi et al. 2022, 3)

Perception plays a crucial role in influencing preventive behavior within a population. Increased exposure to health professionals, news, and other media sources enhances alertness and aids in risk assessments (Khosravi 2020, 1). Older individuals expressed higher concern about COVID-19 and its associated health risks during the pandemic. This fear triggers threat appraisal, which is vital for adopting preventive behaviour (Bitan et al. 2020, 1; Gerritsenb 2020, 1876). A better understanding of the origin and various risks associated with COVID-19 stimulates behavioural changes (Shirahmadi et al. 2020, 2). Therefore, increased exposure to official sources of information promotes preventive behaviours (Khosravi 2020, 1). Trusting in governmental initiatives has a strong positive correlation with preventive behaviours (Al-Rasheed 2020, 552), and an increased perception of risk leads to specific actions to avoid illness (Adunlin et al. 2020, 3). However, negative perceptions and experiences may hinder this preventive stimulus. Some respondents in the study had negative experiences and perceptions of vaccines, including fear of drug administration, pain, past side effects, vaccine ineffectiveness, and misconceptions about vaccines (Pugliese-Garcia et al. 2018, 5619). Fabricated viral messages from various outlets and conspiracy theories negate information from official sources (Banai et al. 2021, 7455; Pummerer et al. 2021, 49), leading to a decrease in behavioural risk assessment (Kim & Kim 2021, 70). Some individuals refuse vaccination due to scepticism about the vaccine's positive effects (Alabbad et al. 2018, 491). The study reveals a strong positive correlation between the perception of COVID-19 information sources and COVID-19 preventive experience. The emergence of new COVID-19 mutations challenges community preparedness for transmission, treatment, and diagnosis (Zieneldien et al. 2021, 12). There is also concern about the unknown side effects of vaccines among the population (Kashte et al. 2021, 726). The study demonstrates that increased satisfaction with vaccination drives correlates with an increased willingness to participate in future vaccination. This increased satisfaction is associated with proper information dissemination, hospitable health worker approaches the absence of side effects, and a sociable neighbourhood. This is vital as the cultural context of the Mokokchung district may play a pivotal role, with reports of cultural beliefs and norms influencing vaccine acceptance presented by Al-Ghuraibi et al. (2022, 11)

Ultimately, increased threat assessment (Perception) and Hospitality received lead to higher satisfaction among the older population, resulting in an increased willingness for future vaccination. These findings support the hypothesis that satisfaction positively influences future vaccination willingness. Although the statistical significance between Experience and Satisfaction was not observed (H-III rejected, $p=0.681$), the researchers believe that larger sample size and variation in data collection tools may improve statistical significance. Therefore, this variable remains included in the current hypothesized model. In conclusion, this study sheds light on the significance of Satisfaction and Hospitality in shaping the attitudes of the geriatric population toward future vaccination drives. It emphasizes the importance of considering the perceptions and experiences of older adults in vaccination initiatives to promote their well-being and overall community health.

CONCLUSION

In the present study identified and analysed five latent variables: Experience, Hospitality, Perception, Satisfaction, and Future. The model fit indices of the Structural Equation Model (SEM) were within the accepted values, indicating an acceptable fit of the model to the data. Based on the standardized coefficients, we observed that Satisfaction had the highest positive correlation (0.575) with Future vaccination, followed by Hospitality's influence on Experience (0.257), and lastly, Perception's impact on Experience (0.176). These findings highlight the significance of Satisfaction and Hospitality in shaping the willingness of the older population to participate in future vaccination drives and the role of Perception in influencing their overall experiences related to vaccination. In light of the study's results, the following recommendations are proposed to promote increased well-being and preventive behavioural traits among the geriatric population:

1. Creating a Healthy Neighbourhood: Efforts should be made to establish and maintain a healthy and supportive neighbourhood environment for the older population. This may include accessible healthcare facilities, green spaces, and safety measures to promote a sense of well-being and security.
2. Regular Social Participation: Encouraging regular social participation among older adults can improve overall well-being. Organizing social activities, community gatherings, and programs that engage the aging population can help reduce feelings of isolation and promote a sense of belonging.
3. Co-residence with Considerate Peers: Foster living arrangements allow older adults to co-reside with considerate peers who provide support and companionship. Such living arrangements can positively impact their mental and emotional well-being.
4. Favourable Environment and Social Leisure Activities: Designing environments that offer opportunities for social leisure activities can enhance the well-being of older adults. Providing spaces for social interactions and leisure pursuits can contribute to their overall life satisfaction.
5. Increased Exposure to Health Professionals and Reliable Information: Encouraging older adults to seek information from health professionals and reliable sources can increase their awareness of health risks and preventive measures. Regular updates from trustworthy media sources can also aid in risk assessment.
6. Addressing Vaccine Misconceptions: Efforts should be made to address vaccine misconceptions and concerns. Providing clear and accurate information about the vaccines' safety and efficacy can help dispel doubts and increase acceptance.
7. Controlled Exposure to Misleading Information: Older adults should be encouraged to evaluate information from various sources critically. Educating them about the potential dangers of false viral messages and conspiracy

theories can help minimize the influence of misleading information.

8. Addressing Misconceptions about Vaccines: Addressing misconceptions about the who, whom, and how of vaccines is essential. Providing comprehensive information about vaccines and debunking myths can enhance their understanding and confidence in vaccination.

By implementing these recommendations, policymakers, healthcare providers, and community organizations can contribute to the well-being and health of the geriatric population. It is essential to create a supportive and empathetic environment that addresses older adults' unique needs and concerns to ensure a healthier and more resilient community.

Research limitations: The present study has its set of limitations which needs to be considered when interpreting the results and generalizing the findings:

1. Limited Sample Size: The study faced time constraints, resulting in a smaller sample size or a limited population being considered. A larger sample could have provided more comprehensive and representative results. As a result, the findings may only partially capture some of the diversity and nuances of the geriatric population in the Mokokchung district, Nagaland, or other regions.
2. Specific Group Focus: The study concentrates solely on a specific group of older people in the Mokokchung district, Nagaland, North East India. Consequently, the conclusions and recommendations drawn from this research are specific to this particular group. They may not apply to other sections of the elderly population or different geographic regions. The cultural, socio-economic, and health-related factors of other elderly people may differ significantly, influencing their perceptions, experiences, and attitudes toward vaccination.

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