DOI: https://doi.org/10.53350/pjmhs20221612268

ORIGINAL ARTICLE

Advertising Mental Healthcare through Metaverse: Consequential Effects on Stigmatizing Beliefs, Psychological Safety, and Mental Health Literacy

SHAHZAD ALAM KHAN[1], QURRAT-UL-AIN FATIMA[2], KASHIFA ANSARI[3], MEHBOOB AHMAD[4], AHSANULLAH M MIRBAHAR[5], SOHAIL SAFDAR[6]

[1]*Assistant professor of Medicine Dept. Nishtar Medical University and Hospital, Multan.*
[2]*Associate professor of Behavioral Science Dept. Multan Medical & Dental College, Multan.*
[3]*Specialist Sonologist of Sonology Dept. Dr. Sulaiman AL Habib Hospital Al-khobar, Dammam Saudi Arabia.*
[4]*Research Scholar Air University Multan Campus.*
[5]*Senior Research Officer, Health Research Institute (HRI) - NIH, Islamabad. HRI Research Nishtar Medical University, Multan.*
[6]*Principal Research Officer, Health Research Institute (HRI) - NIH, Islamabad. HRI Research Centre, Nishtar Medical University, Multan.*
Corresponding author: Shahzad Alam Khan, Email: shahzadalam17735@gmail.com, Cell: 0300 7195857

ABSTRACT

Objective: to measure the influence of metaverse advertising on mental health literacy and metaverse technology adoption while considering its benefits in complex social and psychological considerations

Study Design: Retrospective observational study

Place and duration: The data was collected from the department of general medicine Nishtar hospital, Multan in population of Multan from April 2021 to March 2022.

Methodology: Our sample size was selected as 400 respondents, considering the confidence interval of 95%, wherein at least 383 respondents are necessary with large population size. In this study, the quantitative data was collected through a self-administered questionnaire and it was prepared on the five-point Likert scale to collect the data from the respondents. Only 392 questionnaires were included in the analysis of the study. On the other hand, the structural model was assessed by calculating beta value, standard deviation, T test and p-values. The significance of any relationship is assessed through p values which should be less than 0.05.

Results: The results also confirmed that mental health literacy is improved through metaverse advertising on mental health care and by following the mediating role of stigmatized beliefs and psychological safety. Likewise, H2a was tested to reveal that psychological safety mediates the relationship between Metaverse advertising on mental health care and mental health literacy (β= 0.569, t=7.862, p= 0.000). At the same time, H3a was tested to reveal that stigmatized beliefs mediate the relationship between Metaverse advertising on mental health care and mental health literacy (β= 0.0063, t=2.089, p= 0.018).

Conclusion: The results of this study conclude that the metaverse is gaining publicity every day, and its application in medical intervention is beneficial and revolutionary. It can root out long-standing social issues like stigmatizing beliefs and psychological safety. In this way, metaverse advertising on mental healthcare is a proven method to enhance mental health literacy which is the desired outcome of this research study.

Practical Implication: Current study looked at how mental health literacy and stigma affect people's perspectives on psychiatric treatments in population of Pakistan. To the best of our knowledge no such study was found in local population so this study will provide local statistics on this topic.

Keywords: Metaverse, Stigmatizing Beliefs, Psychological Safety, Mental Health Literacy, and Mental Healthcare.

INTRODUCTION

Mental Healthcare has been one of the most explored topics in clinical research, and mental illness is the top-ranked topic for clinical trials. In modern times, various industries have been using Metaverse advertising to promote their products' brands and maximize their clientage to increase market reach using virtual reality (VR) products or v-commerce. For instance, the music industry and fashion retailers are the pioneers in using Metaverse advertising for their promotional success. Metaverse advertising on mental healthcare can benefit a lot in maintaining and treating psychological issues[1]. After the web-based modules, virtual reality became the next level in this field, providing encompassing and personalized experience and confidentiality for such techniques[2].

The culture of Pakistan is quite adaptable. When it comes to treating mental illness, people from different cultures have developed unique approaches. There is a wide range of healing modalities in Pakistan, many of which have their roots in biopsychosocial and spiritual practises. One's belief system has decisive influence over the mental health healing services they choose.[4,1]

The virtual healthcare island created by IBM is an advanced demonstration of problems and prospects in healthcare and improvement in international healthcare conveyance. The aforementioned medical simulation called second life has simulated processes like assessing blood pressure, heartbeat, surgical interference, and oxygen level maintenance. Metaverse advertising on mental healthcare will also improve mental health literacy[3]. Mental health literacy (MHL) is the first step to diagnosing and treating mental illness. Various models have been developed to gauge mental health literacy and stigmatized beliefs about mental health problems. Some models evaluated particular dimensions of mental health literacy or particular mental diseases and their treatment[4-5]. The construct of mental health literacy (MHL) has been evolving over the years.

Nonetheless, recent developments explained this concept by introducing four components, i.e., achieving and retaining better mental health, diagnosing mental diseases and their remedies, minimizing stigmatizing beliefs about mental illnesses, and awareness to go for mental treatment when a such problem occurs[6]. However, most of the research studies and developed models focus on particular dimensions of mental health literacy MHL or they have concentrated on a particular mental disease and its treatment. Therefore, the present study has evaluated this construct through the novel variable of metaverse advertising on mental healthcare.

Stigmatized beliefs about mental illness have been discussed in the literature in various ways. Specifically, negative labeling includes beliefs that mental illnesses are dangerous, unreal or variant behavior from society[7]. The mental health issue has recently raised serious concerns because stigmatized beliefs associated with mental diseases adversely affect patients with complex disorders of schizophrenia disease. Moreover, Social and environmental effects are associated with negative labelings like danger, discrimination, and violence with such patients[8].

Therefore, there is a dire need to enhance mental health literacy (MHL) to reduce stigmatization and negative labeling of mental diseases. It has been proven that persons with better mental health literacy are lesser inclined to develop stigmatizing beliefs and negative labeling[6]. Similarly, psychological safety is essential to mental health literacy through metaverse

advertisements. When people have psychological safety, they are more open to learning and sharing different ideas, questions, and internal beliefs. Psychological safety is essential for better learning as an individual and a team, and it encourages creativity in the workplace and group performance. It means a person can participate in open discussion without fearing the results of their opinions, thoughts, or comments[9]. Therefore, psychological safety is paramount in high-risk working conditions like healthcare, and Healthcare experts must combine efforts in volatile and complex work situations[10].

People do not share their mental disorders, or they do not talk openly due to fear of reaction from society which indicates a lack of psychological safety. In this respect, according to the researcher's knowledge, no prior study was conducted to find the relationship between metaverse advertising on mental disease and mental health literacy (MHL). Therefore, there was a vivid gap in the theory and literature, which also had significant implications. At the same time, this study is conducted to clarify the more reliable and comprehensive theoretical and practical implications for the above variables. The study has also provided a framework solution that comprehensively represents the variables and has suggested future research to fill different literature gaps.

METHODOLOGY

Study Setting: Study was conducted at department of general medicine, Nishtar hospital, Multan.

Study Design:

Study Duration: 12 months from April 2021 to March 2022

Sample Size: Our sample size was selected as 400 respondents, considering the confidence interval of 95%, wherein at least 383 respondents are necessary with large population size.

Methodology: This study was conducted after getting departmental ethical permission from our hospital. For the number mentioned earlier, a total of 550 questionnaires were distributed among target respondents who visited the hospitals over study period because not all were given the questionnaire; instead, purposive sampling involved the judgment of the researchers in selecting the respondent for the study as mentioned above. Secondly, the respondents were to provide the appropriate responses to the questionnaire to qualify for inclusion in the analysis. Therefore, the worth of the study is unquestionable. Finally, 412 questionnaires were submitted by the respondents; wherein the response rate remained 75%. After screening the incorrect entries of questionnaires, only 392 questionnaires were included in the analysis of the study. In this regard, 15 scale items for metaverse advertising on mental healthcare, 13 scale items for mental health literacy, 10 items scale of stigmatized beliefs between metaverse advertising and mental health literacy and 7 items scale for measuring the psychological safety were also considered necessary in the present study to check the mediating role of psychological safety between metaverse advertising on mental health care and mental health literacy.

Data Analysis: On the other hand, the structural model was assessed by calculating beta value, standard deviation, T test and p-values. The significance of any relationship is assessed through p values which should be less than 0.05.

RESULTS

The confirmatory factor analysis (CFA) was applied to the data after screening the incorrect entries. Smart PLS-SEM software (see Table 1) was used to perform CFA. It was applied to explore factor loadings against each item of the study to measure the validity and reliability of the scale. The results reveal that the values of factor loadings for each scale item were more than 0.40, the minimum significant level for successful measures, so all the items were considered for the study's final results. The results are significant and exciting validation of previously established scales in the context of the present study. The following table describes the results of the CFA.

The composite reliability (CR) and average variance extracted (AVE) were determined through PLS calculations. The values of CR were more than 0.70, which is the minimum recommended level of these values. Likewise, the values of average variance extracted were more than 0.50, which describes a significant relationship between the proposed variables and the model. Significantly, these results highlight the reliability and validity of the scale items used in this study. The following figure-1, reflects the factor loadings of all constructs, which shows that every relationship in the described model is significant.

The discriminant validity is calculated to assess and prevent multicollinearity issues. In the present study, the discriminant validity is measured through heterotrait-monotrait (HTMT) ratio of correlations method as described in table 2 above. The HTMT is a strict criterion to detect the probability of multicollinearity among the latent variables. The table below describes that the instrument of the present study contained four latent variables appropriate in terms of discriminant validity as well because all the HTMT values are under 0.90. On the other hand, the structural model was assessed by calculating beta value, standard deviation, T statistic, and P Values. The significance of any relationship is assessed through p values which should be less than 0.05, and P values reflect whether the hypothesis test results are statistically significant or not. Table 3 shows the recommended threshold for this model's values and tests. The hypothesis testing results are given in Table 3 and Table 4. H1 was tested to check its significance, and the results revealed that Metaverse advertising on mental health care significantly affects mental health literacy (β= 0.211, t= 3.266, p= 0.001); thus, H1 is accepted. H2 was tested to check its significance, and the results revealed that Metaverse advertising on mental health care has a significant negative effect on stigmatized beliefs (β= 0.817, t= 37.061, p= 0.000), so H2 is accepted. H3 was tested to check its significance, revealing that metaverse advertising on mental healthcare significantly affects stigmatized beliefs (β= 0.708, t=19.224, p= 0.000). Thus, H3 is accepted. H4 was tested to check its significance, and results revealed that psychological safety significantly affects mental health literacy (β= 0.686, t= 8.619, p= 0.000). Thus, H4 is accepted. H5 was tested to check its significance, and its results reveal that Stigmatized beliefs impact mental health literacy (β= 0.089, t= 2.156, p= 0.016). Hence H5 is accepted.

Likewise, H2a was tested to reveal that psychological safety mediates the relationship between Metaverse advertising on mental health care and mental health literacy (β= 0.569, t=7.862, p= 0.000). At the same time, H3a was tested to reveal that stigmatized beliefs mediate the relationship between Metaverse advertising on mental health care and mental health literacy (β= 0.0063, t=2.089, p= 0.018).

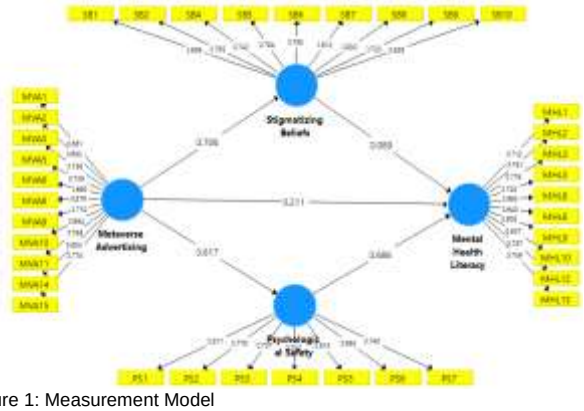

Figure 1: Measurement Model

Likewise, table 4 below presents a measure of mediation analysis according to the mediation hypotheses above. Herein, the

p Values at a 95% confidence interval are less than 0.05, proving the mediation analysis hypotheses. Hence we infer that the construct of stigmatized beliefs and psychological safety mediate the relationship between metaverse advertising on mental healthcare and mental health literacy.

Table 1: Measurement Model Assessment

Constructs	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Mental Health Literacy	MHL1	0.712	0.910	0.925	0.555
	MHL2	0.761			
	MHL3	0.776			
	MHL5	0.720			
	MHL6	0.665			
	MHL8	0.640			
	MHL9	0.805			
	MHL10	0.807			
	MHL12	0.787			
	MHL13	0.759			
Meta-verse Advertising	MVA1	0.661	0.903	0.919	0.508
	MVA2	0.693			
	MVA3	0.758			
	MVA5	0.739			
	MVA6	0.680			
	MVA8	0.679			
	MVA9	0.710			
	MVA10	0.694			
	MVA11	0.786			
	MVA14	0.654			
	MVA15	0.770			
Psychological Safety	PS1	0.811	0.872	0.902	0.568
	PS2	0.776			
	PS3	0.737			
	PS4	0.702			
	PS5	0.814			
	PS6	0.685			
	PS7	0.740			
Stigmatizing Beliefs	SB1	0.809	0.926	0.938	0.629
	SB2	0.785			
	SB4	0.742			
	SB5	0.784			
	SB6	0.785			
	SB7	0.812			
	SB8	0.830			
	SB9	0.723			
	SB10	0.858			

Table 2: Heterotrait-Monotrait (HTMT)

	MHL	MVA	PS	SB
Mental Health Literacy				
Meta-verse Advertising	0.785			
Psychological Safety	0.654	0.816		
Stigmatizing Beliefs	0.714	0.763	0.782	

Table 3: Hypotheses Testing (Direct)

Direct Hypotheses	Beta	SD	T stats	P Values	Decision
Metaverse Advertising -> Mental Health Literacy	0.211	0.065	3.266	0.001	Supported
Metaverse Advertising -> Psychological Safety	0.817	0.022	37.061	0.000	Supported
Metaverse Advertising -> Stigmatizing Beliefs	0.708	0.037	19.224	0.000	Supported
Psychological Safety -> Mental Health Literacy	0.686	0.080	8.619	0.000	Supported
Stigmatizing Beliefs -> Mental Health Literacy	0.089	0.041	2.156	0.016	Supported

Table 4: Mediation Hypotheses

					Confidence Interval		
	Beta	SD	T Stats	P Values	5.00%	95.00%	Decision
Meta-verse Advertising -> Psychological Safety -> Mental Health Literacy	0.560	0.071	7.862	0.000	0.435	0.671	Mediation
Meta-verse Advertising -> Stigmatizing Beliefs -> Mental Health Literacy	0.063	0.030	2.089	0.018	0.014	0.114	Mediation

DISCUSSION

According to hypothesis H1, the relationship between metaverse advertising on mental healthcare and mental health literacy is significant. It means that metaverse advertising can significantly increase knowledge about mental health. It is just the start of the hype of the metaverse; a lot is yet to come, which we are not yet able to anticipate[11]. Mental health literacy is being recognized as a significant construct to increase the mental health of individuals and society[12]. A study also introducing metaverse technology could benefit society, especially the healthcare sector[13].

Therefore, the role of metaverse advertising in mental healthcare is becoming vital due to the need for public awareness about mental health and the elimination of stigma associated with mental diseases. The results of H2 have revealed a significant relationship between metaverse advertising on mental health care and psychological safety. It means that metaverse advertising

gives confidence about the mental problem and does not allow attaching stigma so the persons feel psychologically safe[14]. Moreover, the results of H3 describe a significant relationship between metaverse advertising and stigmatized beliefs. A person with mental illness might apply to himself the negative meanings or messages the society sends towards him, which is called internal stigma[15]. Thus, due to metaverse advertising, negative meanings will be lesser associated with persons with mental disorders, so stigmatized beliefs against mental disorders will be reduced[16].

According to the results of H4 and H5, the present research study found a significant relationship the psychological safety and Mental Health literacy. Likewise, the study revealed a significant positive relationship between stigmatized beliefs and Mental Health Literacy. Persons having mental disorders or illnesses visit rehabilitation hospitals to get treatment for their disease[17]. These people rate psychological safety and stigmatized beliefs as precursors of awareness/literacy on mental health. Therefore, promoting mental health literacy depends on how safe the patients feel psychologically safe and a lesser stigma employed[18]. Furthermore, hypotheses H2a and H3a were assumed to describe mediation analysis concerning stigmatized beliefs and psychological safety as mediators between metaverse advertising on mental healthcare and mental health literacy.

The present research study has significant implications for both theory and practice. Originally the metaverse advertising on mental health literacy model proposed a collection of four variables that can explain the effect of metaverse advertising on mental healthcare and its impact on mental health literacy. In the quest for existing literature, it has been found that the existing research literature has concentrated on the significance of metaverse technology and mental health care along with its medical interventions[14, 19]. Conclusively, these significant implications of the study would fulfill the gap in the available literature on metaverse advertising and mental health literacy to have an even greater significance for the research study.

CONCLUSION

The results of this study conclude that the metaverse is gaining hype every day, and its application in medical intervention is beneficial and revolutionary. It can root out long-standing social issues like stigmatizing beliefs and psychological safety. In this way, metaverse advertising on mental healthcare is a proven method to enhance mental health literacy which is the desired outcome of this research study.

REFERENCES

1. Wang I. The Digital Mind of Tomorrow: Rethink, transform, and thrive in today's fast-changing and brutal digital world. Digital Thinker Book; 2022 Jul 12.
2. Kip H, Oberschmidt K, Bierbooms JJ. Ehealth technology in forensic mental healthcare: recommendations for achieving benefits and overcoming barriers. International Journal of Forensic Mental Health. 2020 Aug 22;20(1):31-47.
3. Tilhou R, Taylor V, Crompton H. 3D virtual reality in K-12 education: A thematic systematic review. Emerging technologies and pedagogies in the curriculum. 2020:169-84.
4. Corrigan PW, Watson AC, Barr L. The self-stigma of mental illness: Implications for self-esteem and self-efficacy. Journal of social and clinical psychology. 2006 Oct 1;25(8):875.
5. Evans-Lacko S, Little K, Meltzer H, Rose D, Rhydderch D, Henderson C, Thornicroft G. Development and psychometric properties of the mental health knowledge schedule. The Canadian Journal of Psychiatry. 2010 Jul;55(7):440-8.
6. Bonanno R, Sisselman-Borgia A, Veselak K. Parental mental health literacy and stigmatizing beliefs. Social Work in Mental Health. 2021 Jul 4;19(4):324-44.
7. Chow GM, Bird MD, Gabana NT, Cooper BT, Becker MA. A program to reduce stigma toward mental illness and promote mental health literacy and help-seeking in National Collegiate Athletic Association Division I student-athletes. Journal of Clinical Sport Psychology. 2020 Jul 28;15(3):185-205.
8. Mannarini S, Rossi A, Munari C. How do education and experience with mental illness interact with causal beliefs, eligible treatments and stigmatising attitudes towards schizophrenia? A comparison between mental health professionals, psychology students, relatives and patients. BMC psychiatry. 2020 Dec;20(1):1-1.
9. Lateef F. Maximizing learning and creativity: understanding psychological safety in simulation-based learning. J Emerg Trauma Shock. 2020; 13 (1): 5-14.
10. Rangachari P, L. Woods J. Preserving organizational resilience, patient safety, and staff retention during COVID-19 requires a holistic consideration of the psychological safety of healthcare workers. International journal of environmental research and public health. 2020 Jun;17(12):4267.
11. Kim J. Advertising in the Metaverse: Research agenda. Journal of Interactive Advertising. 2021 Sep 2;21(3):141-4.
12. Wei Y, McGrath PJ, Hayden J, Kutcher S. Mental health literacy measures evaluating knowledge, attitudes and help-seeking: a scoping review. BMC psychiatry. 2015 Dec;15(1):1-20.
13. Bibri SE, Allam Z. The Metaverse as a virtual form of data-driven smart cities: the ethics of the hyper-connectivity, datafication, algorithmization, and platformization of urban society. Computational Urban Science, 2022;2(1):22.
14. Usmani SS, Sharath M, Mehendale M. Future of mental health in the metaverse. General Psychiatry. 2022 Aug 1;35(4):e100825.
15. Ibrahim AW, Mukhtar Y, Sadique P, Tahir BM, Olabisi AM, Bukar RI, Abba WM, Abayomi OB. A facility-based assessment of internalized stigma among patients with severe mental illnesses in Maiduguri, North-Eastern Nigeria. Int Neuropsychiatr Dis J. 2016;6(1):1-1.
16. Goldston J, Chaffer TJ, Martinez G. The Metaverse as the Digital Leviathan: A Case Study of Bit. Country. Journal of Applied Business & Economics. 2022 Feb 1;24(2):40-59.
17. Rüsch N, Angermeyer MC, Corrigan PW. The stigma of mental illness: concepts, forms, and consequences. Psychiatrische Praxis. 2005 Jul 1;32(5):221-32.
18. Lopez V, Sanchez K, Killian MO, Eghaneyan BH. Depression screening and education: an examination of mental health literacy and stigma in a sample of Hispanic women. BMC public health. 2018 Dec;18(1):1-8.
19. Yang D, Zhou J, Chen R, Song Y, Song Z, Zhang X, Wang Q, Wang K, Zhou C, Sun J, Zhang L. Expert consensus on the metaverse in medicine. Clinical eHealth. 2022 Dec 1;5:1-9.