How to Cite:
Mohamed, N. A., Hoda, R. N., & Osman, B. M. (2022). Psychological and behavioral responses to COVID-19: Media influences at fourth versus first wave among Arab countries citizens. *International Journal of Health Sciences*, *6*(S1), 13253–13270. https://doi.org/10.53730/ijhs.v6nS1.13732

Psychological and behavioral responses to COVID-19: Media influences at fourth versus first wave among Arab countries citizens

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***Abstract*---**Background: There is epidemic fatigue due to the prolonged COVID-19-related restrictions. Some individuals seem to exercise fewer precautions recently in comparison to the onset of the pandemic. Aim: To assess psychological and behavioral responses to COVID-19 and media influences at fourth versus first wave. Design: Online cross-sectional survey. Methods: A total of 1005 participants were recruited using snowball sampling from nine Arab countries Egypt, Iraq, Algeria, Morocco, Palestine, Sudan, Kuwait, Syria and Libya through fourth wave of COVID-19. Five questionnaires were employed: General Information Questionnaire, Psychological and Behavioral Responses, Corona Disease Anxiety Scale (CDAS), Health Belief Model (HBM) Construct and Media Exposure Questionnaire. Results: Most of participants reported low level of; psychological responses (86%), Corona disease anxiety (78.3%) and media exposure (84.6%). Although majority of participants (70%) indicated low barriers to adhere the preventive behavior, (37%) reported a lower compliance than the first wave and (35.6%) had low perceived susceptibility. There was statistically significant positive correlation between media exposure and health beliefs, psychological and behavioral responses to COVID-19, and Corona disease anxiety. Conclusion: The proper use of social media for information purposes is beneficial in shaping psychological and behavioral responses during the COVID-19

pandemic. Recommendations**:** Media should increase the awareness without increasing fear and support stigmatized groups.

***Keywords*---**psychological responses, behavioral responses, corona disease anxiety, media, COVID-19.

Introduction

Psychological studies have found that repeated exposure to traumatic events creates a cumulative effect that makes survivors more sensitive to subsequent traumatic events. On the other hand, it can build resilience through habituation and coping (Chan et al., 2022). While there's a subgroup of the population is at potentially high risk of suffering fear, stigmatization, and discrimination will need special consideration from community health professionals (Abdelhafiz & Alorabi, 2020). The abundance of ambiguous, and inaccurate information during COVID-19 led to information overload and accelerated health anxiety (cyberchondria) as well as People have developed significant state of uncertainty (El-slamoni et al., 2022).

COVID-19 is a global disaster that has been spreading around the world at a dangerously fast pace. There have been here have been 623,470,447 confirmed cases of COVID-19, including 6,551,678 deaths, (WHO, October 2022). A total of 4 waves have hit the world, the first wave from late January 2020 to mid-February 2020, followed by the 2nd wave that hit late February to late June. The 3rd wave unfortunately started on September 8th and lasted a few weeks before we were hit by the 4th wave until today (Ford, Douglas & Barrett, 2022). A worldwide gradual reduction of adherence to protective behavior in every world region from initial levels at the beginning of pandemic was reported by (Petherick et al., 2021) also associated with indifference to authority guidelines (Ford et al., 2022); Previously effective core messages regarding washing hands, wearing face masks and practicing proper hygiene etiquette and physical distancing may seem less effective. However, it poses a serious threat to efforts to control the spread of the virus (WHO, 2020).

Media play a huge role as it can influence public behavior and control the spread of disease (Anwar, Malik, Raees & Anwar, 2020) promote people's emotional stability (Liu Xie, Li & Ji, 2020). On the other hand, the director of WHO, considered the pandemic as "infodemic" highlighting serious issues arising from the abundance of misinformation and fake news circulating about COVID-19 (Islam, Laato, Talukder & Sutinen, 2020). Studies examining the link between interest in COVID-19 news and compliance to preventive behavior are warranted to optimize control of the pandemic (Buneviciene, Bunevicius, Bagdonas & Bunevicius, 2022) Furthermore, social media fatigue generates a mental exhaustion due to exposure to multiple technological, informational, and communicative overloads from interactions on various online social media platforms (Islam et al., 2020).

Nurses, cited as the most trusted professionals for their honesty and ethical standards, have a critical responsibility in combating misinformation and in

helping patients, families and communities to identify and access credible, trusted health sources and infection reduction initiatives (Fawaz, Anshasi & Samaha, 2020). Also, conduct studies to prevent the spread of pandemic and provide physical and psychological support to individuals which will be crucial.

Nurses have an important role in breaking bad news by providing those affected with the right information (Sarango, Mesa-Cano, Ramírez-Coronel, & Brito, 2021; Kim, Yu, Yu & Park, 2021). Additionally, nurses with different specialties should employ health education, empowerment strategies, and advocacy in adapting to the COVID-19 pandemic situation (Akbar, Juniarti & Yamin, 2022).

Significance of the study

The health behavior patterns of the Arab communities during the 4th wave of the COVID-19 pandemic are still unknown. As observed in the Egyptian community, there is a transition from the intimidation phase to the underestimation of the problem phase. According to Center for Disease Control and Prevention (2022), 37% of youth reported they experienced poor mental health during COVID-19 and 44% reported they persistently felt sad or hopeless during the past year. El Sayed (2021) who studied psychological problems of COVID-19 in Egypt society reported that 74.62% had moderate to high fear of COVID-19, 59.4% reported moderate to high psychological stresses, 60.4% reported moderate to high boredom and distress, 45.3% moderate to high frustration, and 52.4% moderate to high loneliness, 87.2% reported moderate to high the family anxiety.

Therefore, the present study highlights the difference between the first wave and the fourth wave in terms of the effect of mass media and social media on anxiety levels, psychological responses and the behavioral response based on the health belief model to examine the predictors of engaging in protective behaviors. These predictors could potentially be of great practical importance in controlling of outbreaks of epidemics. The study can help nursing professionals to tailor health communication strategies to achieve desired behavioral outcomes (vaccination and taking precautions) and control future epidemic waves. Examine whether there was an ongoing reduction in adherence to protective behaviors, fear, and stigma in the fourth wave compared to the first wave, as assumed in anticipation of pandemic fatigue.

Aim of the study

The aim of this study is to assess psychological and behavioral responses to COVID-19 and media influences at fourth versus first wave.

Research questions

1. What are the relations between psychological and behavioral responses to COVID-19 and media?
2. What is the incidence of anxiety during COVID 19?
3. Is there a difference at psychological responses, anxiety level, adherence to preventive measures and media exposure between fourth versus first wave of COVID 19?

Materials and Methods

Research design

Online cross-sectional design was used to conduct the current study.

Sample

An anonymous online survey was distributed to general population from Arab countries Egypt, Iraq, Algeria Morocco, Palestine, Sudan, Kuwait, Syria and Libya through fourth wave of COVID-19. Snowball sampling was used to recruit participants for this study. The questionnaire was made available online via Google forms. The link to the survey questions was sent to social media groups and forums (general Arab Facebook pages, what`s app groups). The inclusion criteria were: 1) from Arab countries, 2) above 18 years, 3) able to complete the online questionnaire independently. According to Kendall's sample size calculation method, the sample size should be 5–10 times the number of items in the questionnaire. Therefore, considering four scales comprising 43 items; a sample size of 215- 430 was required for this study. Assuming a 20% dropout rate, the study sample size was required ranged from 258 to 516 participants. A total of 1005 participants were investigated out of 423 million: the total population of the Arab region (World Population Review, 2020) through Oct.10, to Nov.10, 2021.

Tools of data collection

Five tools were employed in this study.

1. General Information Questionnaire included age, gender, level of education, is there difference at fourth wave than first wave in relation to using of preventive measures and anxiety level, if the response with yes (more anxious, less anxious in 4thwave than 1st wave, the same in 4th & 1st wave, not present in 4th & 1st wave), Frequency of using mass/social media for searching information about COVID-19.
2. Psychological and Behavioral Responses Scale was developed by Lin, Hu, Alias and Wong (2020). It was translated into Arabic language by the researchers and back translated by experts in English language. Psychological responses contain five questions about feelings of fear, avoidance, keep secret, embarrassment and stigma, using a 4-point Likert scale, with the items scored as 1 (strongly disagree), 2 (disagree), 3 (agree), or 4 (strongly agree). The total score ranged from 5-20, with higher scores representing higher levels of emotional consequences. Total score was categorized into two levels: low (5-12) and high (13-20). Cronbach Alpha was 0.74. Behavioral responses consist of 8 items relating to preventive measures, personal protection (3 items), cough etiquette (3 items), and maintain social distance (2 items). A 4-point Likert scale was used to report responses, with scores of 1(very easy), 2(easy), 3(difficult), 4(very difficult). The total score ranged from 8-32, with higher scores representing (barriers) of physical prevention. Total score was categorized into two levels: low (8-19) and high (20-32). Cronbach Alpha was 0.73.

3. Corona Disease Anxiety Scale (CDAS) was developed by Alipour, Ghadami, Farsham, and Dorri (2020). It was translated into Arabic language by the researchers and back translated by English experts. This instrument involved 18 items and 2 factors, the items 1 to 9 measure the physical symptoms and items 10 to 18 measure the psychological symptoms. This instrument is scored on a 4-point Likert scale (never=0, sometimes=1, often=2 and always=3). Total score was categorized into three levels: Low level (0 > 18), moderate level (18 >36) and high level (36 ≥ 54). Cronbach's alpha (α=0.83).
4. Health Belief Model Constructs adapted from Kamran et al., (2021) consists of six questions. Items include Perceived severity (How serious do you think COVID-19 is?) Perceived susceptibility, Perceived efficacy, Perceived control or intention, and 2 open questions related to Perceived barriers and Cues to action. Responses were measured using a 3-point scale, with the items scored as low=1, Moderate=2 and High=3.
5. Media exposure questionnaire was developed by the researchers based on the Mass Media and Social Media Exposure questionnaire by Lin et al. (2020) literature review. It consists of six questions on the most form used of mass and social media; it queries participants about types of information acquisition and how many hours used for searching information about COVID-19 through mass/social media. The participants can select more than option on every question. Media exposure is considered low level (> 3hr), moderate (3-6 hr) and high level (<7 hr).

Ethical considerations

An official approval was granted from the Research Ethics Committee, Faculty of Nursing Cairo University to precede the study with (IRB approval number: 2019041701). The purpose of the study was explained to the participants. The researchers assured the voluntary participation. Confidentiality and anonymity were thoroughly ensured, and no names or email addresses were asked. The gathered data was used only for the purposes of the study. Consent was implied through their completion of the questionnaire.

Procedure

The approval was granted from Scientific Research Ethics Committee of Faculty of Nursing Cairo University with. The study tools were developed through an online application using Google form platform. Time needed by each participant to complete the five questionnaires was ranged between 10-15 minutes. The survey link was distributed from Oct.10, 2021, to Nov.10, 2021 through various Arab social media groups and forums (generic Facebook pages, What's-app groups).

Pilot Study

A Pilot study was carried out on 10% of the sample consisted of 25 participants to ensure the clarity and applicability of the study measures and the feasibility of the research process. The pilot study revealed that, no modifications are needed to be made. Participants who shared in the pilot were excluded from the main study sample.

Statistical Analysis

Data was analyzed using the statistical package for social science (SPSS) version 20 Numerical data was expressed as mean and SD. Quantitative data was expressed as frequency and percentage. For quantitative data, comparison between two variables was used t-test, and for comparison between more than two variables ANOVA test was used. Relations between different numerical variables were tested using Pearson correlation. Probability (p-value) less than 0.05 was considered significant and less than 0.001 was considered highly significant.

Results and Discussions

Table (1) shows that the participants` age ranged between 18 to above 50 years; (52.7%) of them their age ranged between 21 >30years old with mean (27.95±10.23). Female were (68.2%) and (46.8%) had baccalaureate. Less than one third (28.3%) working in medical field. More than two thirds of participants (69.8%) were single. More than half (53%) were students. Participants were mainly from Egypt (57.5%), Algeria (28%) and Iraq (5%).

Table (2) shows that more than half of participants (55.7%) strongly disagree to have a fear to let people know if they may have been infected with COVID-19. More than one third (34.9%) of participants strongly disagree to be avoidant if infected. Nearly two thirds of participants (59.5%) strongly disagree to keep COVID 19 infection a secret. More than half of participants strongly disagree of being embarrassed or stigmatized of COVID-19 infection (56.7%, 61.7%) respectively.

Regarding behavioral responses, firstly, personal protection; around half of participants were difficult for them to avoid touching their eyes, nose and mouth and wear a mask all the time (49% & 41.5%) respectively, but it was easy for them (45%) to wash their hands. Secondly, cough etiquette; it was easy for participants to wash hands immediately after a cough or sneeze, or after contact with respiratory secretions and cover their mouth and nose with a tissue when coughing or sneezing (46.2%, 49.1% & 44.6%) respectively. Thirdly, voluntary quarantine; it was easy for participants to avoid closeness and avoid gathering (46.5% & 40.1%) respectively. Table (3) indicates that nearly half of the participants (44.9%) were less using media in 4th wave than 1st wave and, they were less anxious in 4th wave than 1st wave. According to using preventive measures, (37%) was lesser usage in 4th than 1st wave.

Fig (1) reveals that the most important social network was Facebook, websites was Ministry of Health, used media was TV (79.7%, 32.9% & 84.1%) respectively. Table (4) illustrates that less than half of the participants perceived COVID-19 as moderate to very serious disease (41.8%, 42.3%) respectively. In relation to perceived susceptibility of getting COVID-19 infection, (41.8%) think that they had moderate chance to get it. Nearly half of the participants most certainly perceived efficacy and control to carry out prevention measures (46.5%, 47.6%) respectively. Half of the participants (52%) perceived that difficulty to avoid touching the hands, mouth, nose, and eye as a barrier to carry preventive

measures. (42.5%) view daily news and statistics from official sources as cues to perform preventive measures.

It is inferred from Fig. (2) that majority of participants were categorized into low level of psychological, barriers to carry out preventive measures, Corona disease anxiety and media exposure (>3hrs) (86%, 70%, 78.3% & 84.6%) respectively. It is clear from table (5) that there was statistically significant positive correlation between media exposure and health beliefs, psychological and behavioral response to COVID-19, and Corona disease anxiety where (p= 0.04, 0.000, 0.000 & 0.02) respectively. As regards psychological response, there was statistically significant negative correlation with health beliefs where (p=0.000*). While there is a statistically positive significant correlation with behavioral response, Corona disease anxiety at (p=0.000 & 0.000) respectively. There was statistically significant positive correlation between behavioral response and health beliefs where (p=.000). About Corona Disease Anxiety there is a statistically significant positive correlation with health beliefs at (p=0.000).

Table (6) shows that social media use in forth wave vs. first wave had a highly significant effect on behavioral response (B= -0.81, t=-5.87, p=0.000). Behavioral response was also explained by social media (R =-0.18, F change =34.5). Social media use in forth wave vs first wave had a highly significant positive effect on perceived self-efficacy, perceived control, or intention (B= 0.4, t=5.33, p=0.0001) psychological response (B= 0.34, t=3.51, p=0.000) and Corona Disease Anxiety (B= 1.39, t=5.14, p=0.000). Health beliefs, psychological response and Corona Disease Anxiety were explained by social media (R =-0.16, F change =28.4), (R= 0.11, F change =12.3) and (R= 0.16, F change =26.4) respectively.

Table (1) Percentage Distribution of characteristics of the Study Sample (n=1005)

Variable	No.	%	Variable	No.	%
Age			Level of education		
< 20	161	16.5	Can read and write	4	.4
20≤ 30	514	52.7	Primary education	10	1.0
31 ≤ 40	160	16.4	Secondary or Diploma	219	21.8
41 ≤ 50	97	9.9	Baccalaureate	471	46.8
>50	43	4.4	Post graduate studies	301	30
			Working in Medical Field		
Mean ± SD	27.95±10.23		Yes	284	28.3
Gender			No	721	71.3
Male	318	31.7	Job		
Female	686	68.2	Working	365	36.3
Marital status			Not working	83	8.3
Single	701	69.8	Student	533	53.0
Married	281	28	Housewife	18	1.8
Divorced	23	2.3	Retired	6	6
Country					
Egypt	577	57.5	Sudan	20	2
Algeria	280	28	Kuwait		15
		1.5			

Iraq	53	5 1.6	Syria		16
Morocco	20	2	Libya	15	1.5
Palestine	9	0.9			

Table (2) Percentage Distribution of psychological and behavioral responses to COVID-19 among the Study Sample (n=1005)

Items	Strongly disagree		Disagree		Agree		Strongly agree	
Psychological responses	No.	%	No.	%	No.	%	No.	%
Fear								
I will be afraid to let people know if I may have been infected with COVID-19	560	55.7	291	29	119	11.8	35	3.5
Avoidance								
If I suspect I may have been infected with COVID-19, I will not think about it until I become unwell/sick	351	34.9	293	29.2	273	27.2	88	8.8
Keep secret								
If I suspect if I may have been infected with COVID-19, I will keep it a secret	598	59.5	305	30.3	83	8.3	19	1.9
Embarrassment								
I will feel embarrassed if others know that I may have been infected with COVID-19	570	56.7	278	27.7	114	11.3	42	4.2
Stigma								
I will lose friends if I tell them if I may have been infected with COVID-19	620	61.7	283	28.2	77	7.8	25	2.5
Behavioral Responses								
Personal protection	Very difficult		difficult		easy		Very easy	
Whenever possible, avoid touching the eyes, nose and mouth	126	12.5	323	32.1	492	49	64	6.4
Wear a mask all the time	204	20.3	281	28	417	41.5	103	10.2
Washing hands with soap frequently	333	33.1	452	45	177	17.6	43	4.3
Cough Etiquette								
Wash hands with soap (or disinfect hands) immediately after a cough or sneeze	245	24.4	464	46.2	242	24.1	53	5.3
Perform hand hygiene after having contact with respiratory secretions or contaminated	326	32.4	493	49.1	156	16.4	21	2.1

objects								
Cover your mouth and nose with a tissue when coughing or sneezing	429	42.7	448	44.6	110	10.9	18	1.8
Maintain social distance								
Avoid proximity(closeness) with other people	216	21.5	467	46.5	278	27.7	44	4.4
Avoid group gathering	200	19.9	403	40.1	336	33.4	65	6.5

Table (3)Percentage Distribution of Using Media, Corona Disease Anxiety and Preventive Measures in Fourth versus First Wave of COVID-19 among the Study Sample (n=1005)

Variables (fourth wave versus first wave)	Using media		Corona Disease Anxiety		Adherence to preventive measures	
	No.	%	No.	%	No.	%
More in 4th wave than 1st wave	209	20.8	196	19.5	263	26.2
Less in 4th wave than 1st wave	451	44.9	461	45.9	372	37
The same in 4th & 1st wave	218	21.7	233	23.2	325	32.4
Not present in 4th & 1st wave	127	12.6	115	11.4	45	4.5

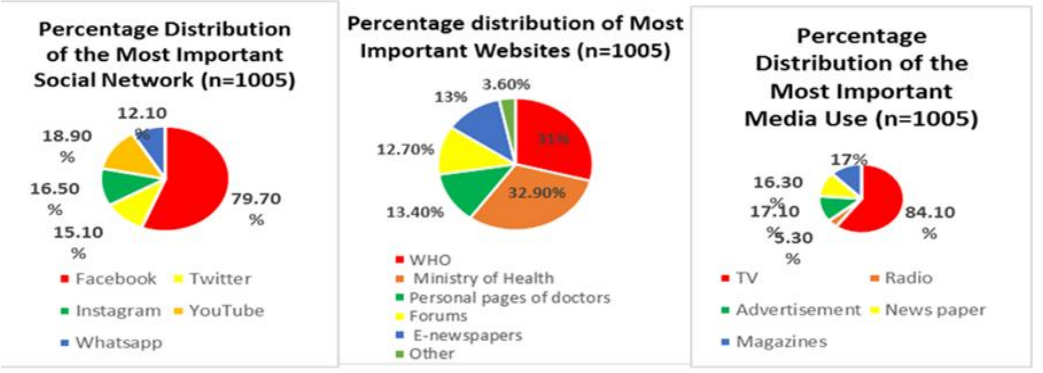

Figure (1)Percentage Distribution of the Most Important Social Networks, Websites and Mass Media Use of the Study Sample (n=1005)

Table (4) Percentage Distribution of Health Belief Model of the Study Sample (n=1005)

Items		No.	%
Perceived severity	low	160	15.7
	Moderate	420	41.8
	High	425	42.3
Perceived susceptibility	low	3 57	35.6
	Moderate	420	41.8
	High	228	22.7
Perceived	Low	243	24.1

self-efficacy	Moderate	295	29.4
	High	467	46.5
Perceived control or intention	Low	242	24
	Moderate	285	28.4
	High	478	47.6
Perceived barriers*	Don't have the patience to follow instructions	201	20
	Difficult to stick to washing hands	159	15.8
	Disinfectants are expensive	187	18.6
	Difficult to avoid touching hands, mouth, nose, & eye	523	52
Cues to action	Watching the media	133	13.2
	View daily news and statistics from official sources	427	42.5
	Watch social media	385	38.3

*Responses not mutually exclusive

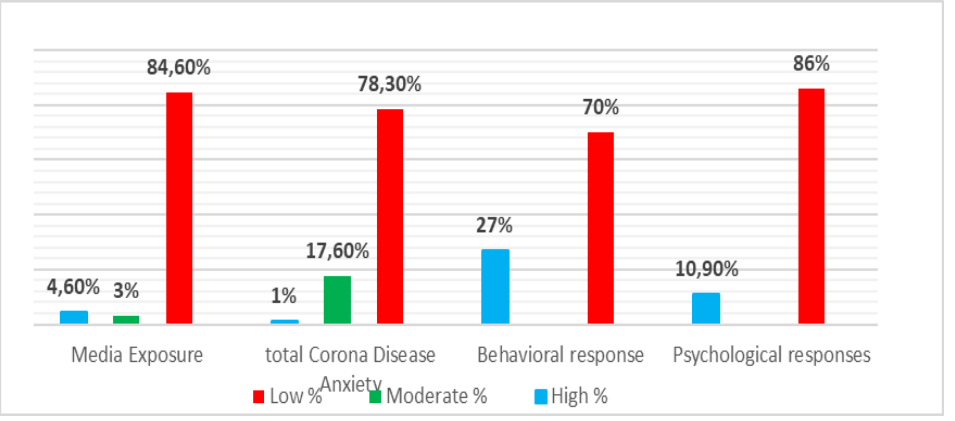

Figure (2) Percentage distribution of psycho-behavioral responses, corona disease anxiety and media exposure of the study sample (n=1005)

Table (5) Correlational Matrix between Study Variables of the Study Sample (n=1005)

Variables	Media Exposure		Health belief		Psychological response		Behavioral response		Corona Disease Anxiety	
	r	Sig.	r	Sig.	r	Sig.	r	Sig.	r	Sig.
Health Beliefs	0.1*	0.047								
Psychological Response to COVID-19	0.12*	0.000	-0.12*	0.000						
Behavioral Response to COVID-19	0.13*	0.000	0.26*	0.000	0.357**	.000				
Corona Disease Anxiety	0.1*	0.02	0.17*	0.000	0.159**	.000	-.036	.130		
M±SD	1.67hr/day		8.36±2.34		8,418 ±		16,993 ±		11,652 ± 7,757	

	±1.2		2,998	4,326	

*Significant at p-value<0.05

Table (6) Regression Analysis for Effect of (social media use in forth wave vs. first wave) on Study Variables (n=1005)

Dependent variable	Unstandardized Coefficients		Standardized Coefficients	F	R	t	P
	B	Std. Error	Beta				
Perceived severity	0.03	0.02	0.04	2.2	0.04	1.5	0.13
Perceived susceptibility	0.05	0.02	0.05	3.4	0.05	1.8	0.06
Perceived self-efficacy	0.14	0.03	0.15	23.1	0.15	4.8	0.000*
Perceived control or intention	0.16	0.03	0.16	28.2	0.16	5.3	0.000*
Psychological Response	0.34	0.09	0.11	12.3	0.11	3.51	0.000*
Behavioral response	0.81	0.13	0.18	34.5	0.18	5.87	0.000*
Corona Disease Anxiety	1.39	0.27	0.16	26.4	0.16	5.14	0.000*

*Significant at p <0.05 ** Highly Significant at P<0.001

Discussions

This cross-sectional study aimed to assess psychological and behavioral responses to COVID-19 and media influences at fourth versus first wave. Regarding Psychological response and Corona disease anxiety, results of current study showed that most of participants had low level of psychological response and Corona disease anxiety. Near half of the participants were less anxious in fourth wave than first wave and strongly disagree to have a fear to let people know if they may have been infected with COVID-19. More than one third of participants strongly disagreed to be avoidant if they think of being infected. About two thirds of participants strongly disagreed of being embarrassed or stigmatized of COVID-19 infection.

Similar results were obtained by Junior et al. (2022) who reported that anxiety was significantly lower in the fourth wave than in the first wave. Similarly, Chan et al. (2022) reported that the fourth wave observed a disassociation between severity and concern of those seeking help. In contrast, Lin et al. (2020a) showed that almost half of the participants “strongly agree/agree” regarding avoidance behavior, 21.2% and 17.9% strongly agreed or agreed that they felt embarrassed/anxious, about half of participants had a psychological impact. Zeng et al. (2021) stated that 35.5% have death anxiety related COVID 19. Studies conducted in the first wave such as El-Zoghby, Soltan and Salama (2020) reported that about half of those with moderate anxiety symptoms. Also, in Saudi

Arabia, Alqahtani et al. (2021) reported that less than a third of participants suggested moderate to severe anxiety. Abdelhafiz et al. (2020) showed that about a quarter of the participants believed that the pandemic was associated with stigma.

From researcher point of view, it could be because people have adapted to the circumstances and their new normal. During this time people may also have gained awareness and knowledge about the disease and its transmission through mass and social media platforms to protect themselves and their families in addition they could use their resilience skills. Despite the minor psychological impact, it should be noted that a continued reduction in the emotional well-being of the public during an infectious disease outbreak is important to control pandemic. These results place a growing responsibility on the psychiatric and mental health nurse for early detection and intervention for mental health problems during these times.

Regarding behavioral responses, current study results showed that, although the majority of the study participants indicated low barriers to the implementation of preventive measures, more than a third of them stated that they are less using preventive measures in the fourth wave versus the first wave. Comparable results of a gradual decline in adherence to the COVID-19 related precautionary measures were reported by Suet et al. (2022) , the worldwide study of Petherick et al. (2021) and Haktanir et al., (2021). While studies conducted in the early pandemic as Al-Hanawi et al. (2020) and Shahnazi et al. (2020) found that more than half of the respondents follow preventive measures in the initial phase of pandemic.

Decline in compliance with preventative measures may be an expected outcome of pandemic fatigue, leading to reduced motivation or ability to comply with protective behaviors and compromising actual compliance. Healthy behavior is easier to initiate than to maintain. New behaviors often lose strength over time. Community health nurse should establish protective behavior strategies that mitigate the decline in adherence over time, and revise assumptions of sustained adherence to preventive measures over time.

Current study revealed that around half of the participants had moderate level of perceived severity and perceived susceptibility with high level of perceived efficacy. Related results were reported recently by Hidayati, Musniati, Hidayat, and Nurmansyah (2022). On the other hand, Barakat and Kasemy (2020) found that the majority of participants in the first wave had high levels of perceived susceptibility to infection and high perceived severity. The difference between results of the studies conducted in the first and fourth waves support the unique value of a time window that gives us perspective on public response. In the first wave, the world has been involved with the pandemic, people have become extremely vulnerable. But with time, people feel well- informed, confident to fight the disease and less likely to be infected in the third and fourth waves.

Regarding media exposure, the current study results indicated that most important social media was Facebook, the mainstream media was television, and more than a third used the Ministry of Health's website. Similar results have been

found in Egypt (Magdy, Metwally & Magdy, 2022) in the Arab world (Khalifa Al-absy & Badran, 2021), Palestine (Radwan, Radwan & Radwan, 2020) in Iraq (Ahmad & Murad, 2020). Facebook is one of the most widely used applications due to its popularity among the Arab population and its ease of use. In Saudi Arabia, the MOH website ranked first as the most credible source for COVID-19 information (Alsulaiman & Rentner, 2018; Alshareef, Yunusa & Al-Hanawi, 2021) These findings carry implications for community health nurses as frontline workers tasked with spreading information on pandemic protective measures and motivating individuals' vaccination to disseminate evidence-based health information via social networking.

In addition, almost half of the participants used media less in the 4th wave than in the 1st wave. Similarly, Buneviciene et al. (2022) indicated that about a third of the participants; Lost interest, avoided or stopped following the COVID-19 news. Several studies documented high public exposure to mass and social media during the first wave of COVID-19(Mohammadi, arafshan, Bashi & Mohammadi, 2020). The explanation for differences in results in first and last wave might be due to Media Fatigue, It refers to increased levels of information overload experienced due to massive usage of social media and leads to information avoidance as a normal consequence of pandemic fatigue (Sunil, Sharma, Amudhan, Anand & John, 2022).

Concerning the relationship between the study variables, there was statistically significant positive correlation between media exposure and psychological response and Corona disease anxiety. Findings similar to those in (Dalkner et al., 2022; Hammad & Alqarni, 2021) who found that prolonged media exposure is associated with exaggerated anxiety and negative reactions. Additionally, social media and other communication methods can be a source of misinformation that can increase anxiety levels. For this reason, WHO(2020) recommended reducing exposure to news about COVID-19 to avoid anxiety and stress.

Present study results also conveyed that, there was statistically significant positive correlation between media exposure and behavioral response to COVID-19. Similar results were reported by (Lin et al., 2020). Furthermore, the results of the present study reported a statistically significant positive correlation between behavioral responses and health beliefs, in accordance with the results of (Shahnazi et al., 2020; Bechard et al., 2021) These findings indicate that community health nurse to provide the public with accurate and credible information through mass and social media to improve mental well-being and encourage preventive behaviors. Also collaborate with media authorities to ensure the credibility of information shared during a contagious pandemic.

Current study detected that psychological responses, fear and perceived risk were significantly positive correlated to preventive behaviors of COVID-19, Similar results have been reported by (Oh, Lee & Han, 2021). It might be due to that fear may increase people's perceived severity and likelihood of risks, which would accordingly stimulate stronger intents to control it, excessive fear might also hinder commitment in preventive behavior. Therefore, public communication

strategies should follow a balance between breaking through optimism bias without inducing excessive fear.

Current study results also showed that social media use in forth wave vs. first wave had a highly significant effect on behavioral response, perceived self-efficacy and perceived control. These results are consistent with Faasse and Newby (2020). Furthermore, social media use in fourth wave versus first wave had a highly significant positive association with psychological response and fear of COVID-19, lower levels of perceptions of avoidance, embarrassment, fear and keeping the infection secret.

These results were supported by Ford et al. (2022) who reported that decreased interest and avoidance of news about COVID-19 are common in the third and fourth waves and were associated with less fear of COVID-19. These results offer insight for both community and psychiatric health nurses concerned with the psychological and communicative processes that both motivate and impede information seeking relating to personal risk.

Strengths and limitations of the study

The novelty of the topic when comparing the 1st and 4th waves in Arab countries. A large sample was used. Limitations of the study; the response rates were not optimal in all countries, which can limit generalizability. There is potential for bias as underprivileged populations may not have access to social media, self-reporting bias, and convenient sampling that is not probabilistic.

Conclusion

Psychological outcomes, anxiety levels and behavioral prevention barriers were reduced with less exposure to mass and social media. Mass and social media are useful tools to receive health messages as they help to improve actual perceived risk and appropriate safety. Indeed, evidence of a reduction in compliance from initial levels of compliance with protective behaviors against COVID-19 means that the motivation to comply gradually decreases over time.

Recommendations

- The media should raise awareness about the pandemic without increasing fear, support stigmatized groups and only provide accurate information to enhance preventive behavior adherence.
- Educational programs about preventive measures and anxiety overcoming should be developed by nurses.

Acknowledgements

We would like to extend our sincere appreciation to the elderly people who participated in the study.

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