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Factors affecting compliance on the usage of face masks by street vendors during COVID-19 pandemic in Pretoria, South Africa

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Abstract---Background: The COVID-19 pandemic has been a major concern all over the world and in a bid to limit and control the spread, several mechanisms were introduced including the usage of mask in serving as a barrier. The present study was set out to investigate factors affecting compliance to the usage of face mask among street vendors in Pretoria, South Africa. Methods: The study was carried out in the Northern and Central parts of the city. The study adopted a mixed method approach as part of an exploratory descriptive survey design and involved 257 purposively selected street vendors selling their goods along major streets of Pretoria. The study was underpinned by knowledge-attitude-behaviour theory as the underlying theoretical framework. Results: Key findings demonstrated that age and gender played a significant role in participants' adherence to the usage of face masks. A major factor contributing to the non-adherence on the usage of the mask was the eagerness to continue participating in their businesses so that they could generate income for the provision and sustenance of their family needs. Some of the respondents (28%) believed that COVID-19 was a myth. While the media appeared to have played a major role in promoting awareness of COVID-19, the awareness did not translate into adherence to the usage of face masks on the part of some of the participants. Conclusion: The participants bemoaned breathing problems, discomfort, itchiness and sores as challenges associated

with the usage of face masks. Non-adherence to the usage of face masks underscores the need for South African Government to assist in the provision of free face masks with a view to curbing the spread of COVID-19.

Keywords---Mask, Vendors, Awareness, Government, Age and Gender.

Introduction

The first report on COVID-19 in South Africa was on the 5th of March 2020 by the National Institute of Communicable Diseases. (NICD 20020). After the report of the first incidence, there were series of educational messages highlighting what should be done to prevent the spread of the virus in the country. The educational messages emphasized the importance of frequent and thorough handwashing with soap and water, use of an alcohol (70%) based hand sanitizer, the need for physical distancing, covering of the mouth with a tissue or flexed elbow when sneezing or coughing, and lastly the use of cloth or other substances to cover the nose. On the 15th of July, 2020, the Minister of Justice and Correctional Services in the country announced that “*it is now a criminal offence to not wear a mask in a public space in South Africa*”. The use of personal protective equipment's (PPE) such as face mask was then introduced all over the world as one of the management options to spread the infection of COVID-19 among people especially in places where social distancing seems not to be possible (Thiel et al. 2021).

Evidence from literature has suggested that COVID-19 can spread through sneezing or coughing from individuals that is either pre - symptomatic or asymptomatic and that respiratory droplets and aerosols expelled during this sneezing or coughing can travel up to 12 to 26 f (Bourouiba, 2020; Jerry 2021). It is therefore important to provide a barrier that will prevent the individuals from getting infected from affected individuals. However, in April 2020, the WHO reported that evidence on the usage of mask to prevent COVID-19 transmission is still premature and therefore and advised the public not to wear face masks unless coughing, sneezing, or caring for a patient with suspected COVID-19 symptoms (Majumder and Mandi 2020). Different reports from other countries have suggested otherwise, for instance, lower COVID-19 transmission rates were reported in countries and regions where citizens are used to or required to wear mask such as many parts of Asia (Galvin et al. 2020; Wang et al. 2020). The facemask may then serve as physical barrier to respiratory droplets that may enter through the nose and mouth and to the expulsion of mucosal droplets from infected individuals (Tang et al. 2009). The correct usage of a mask can reduce the exposure and passage of airborne contaminant into the body through the respiratory route and this method has been found to be one of the cheapest method in protecting the populace (Zhou et al. 2021).

The suitability of face mask in preventing the transmission of diseases varies and largely dependent on the materials and method used for the design (Chua et al. 2020). Masks designed and sewn with materials of bigger pore sizes, such as cotton and synthetic fabric, may not be able to effectively filter the viruses or tiny

virus-laden droplets, as compared with those made of materials with much smaller pore sizes. Likewise, masks made with double layers of fabric or coated with water resistant materials will be more effective against large virus-laden respiratory droplets and fluid spills (Chua et al 2020). The main issues with some of the masks are comfortability and breathability. The tight fitting N95 has filtering capacity better than the usual surgical masks, however, they have lower breathability and may cause discomfort after hours of wearing. Similarly, mask that are made with double layer of fabrics usually from the household materials may provide marginal protection to the wearer from particles less than 2.5 μm , but they are more comfortable, cheap and fit the face (Ma and Shutler 2020).

Several studies have pointed to some discomfort that can be experienced from individuals while wearing mask. The study of Ong et al. (2020) conducted in a hospital in Singapore showed that 815 of the respondent who were mainly nurses have headaches while putting on N95 mask with protective eyewear for about six hours in a day. Lim et al. (2006) had initially reported that those who wore mask for more than 4 hours a day are likely to experience headaches. Apart from headache as noted above, other forms of problem associated with facemask wearing include the breathability which is largely associated with the type of materials used for the mask (Bubbico et al. 2021). Furthermore, problems such as face itching, skin dehydration, skin rashes have been reported while wearing a mask (Badri 2017; Roberge et al. 2012 and Chua et al. 2020).

However, with all the problems associated with mask wearing, the use of mask is mandatory in South Africa and it has become a criminal offence if an individual fails to wear a face mask in the public. Apart from the Health Sector that are used to wearing of surgical mask when necessary during surgical operations in the theatre, the use of face mask is new to the public and there are outcries that are associated with this phenomenon. With the fear of contacting the deadly COVID-19 virus, it may be assumed that knowledge and awareness of the deadly effects of the disease may force compliance. Du and Yuan (2009) proposed the Knowledge-attitude-behaviour theory, in which it was assumed that *“knowledge and information are the foundation for establishing active and correct beliefs and attitudes towards disease and that such attitudes are the driving forces for modifying behaviour”*. In this study, we assumed that the knowledge provided through daily updates on the number of COVID-19 cases inclusive of the number of death and information provided in the media and friends on the impact of the deadly disease will affect people’s attitude towards the wearing of mask. The study was therefore design to check on the factors that are responsible for the adherence to the wearing of mask with the aim of establishing the impact of knowledge and adequate information on behavioural changes on the usage of mask among street vendors in Pretoria. The street vendors depends largely on consumers and passer-by to generate their daily income. They often set up their products close to roads and are heavily reliant on patronage they get from people, at times, this may involve calling on the consumer or introducing the goods to the consumer while adhering strictly with the COVID-19 rules in the country.

Theoretical Framework

The knowledge-attitude-behaviour model hinges on the assumption that knowledge is important for behavioural changes in individual and this can be obtained through evidence or adequate information or skills through learning (Liu et al. 2016). In essence it is important to receive accurate knowledge, which can lead to a gradual development of healthy beliefs and attitudes that are reinforced with the adoption of healthy behaviours. Addressing factors such as knowledge, attitudes and beliefs may thus assist in targeting implementation strategies to positively affect behavioural changes (Knowles 2015). In this study, we used the Knowledge, Attitude and Adoption of Protective Practice (KAAPP) to test whether there is a positive link between people's knowledge, attitude, and adoption of protective practices in relation to the wearing of mask or they are more concerned about other factors such as income generation and whether these KAAPPs have led to behavioral changes in their response to COVID-19 pandemic. It was envisaged that since the general public including the vendors are aware of the dangers posed by the COVID-19 as regards its impact and the number of people that have died on a daily basis, occurrence and frequency of the disease, and the daily information on the lack of hospital space to accommodate more sick patients, will affect their behaviour and response to the disease. Thus, we expect them to show more readiness to prevent, caution and also a higher degree of concern and practice of protective behaviours in relation to the dreaded disease. The study was predicated on the research question: What factors influence adherence to the usage of face masks by street vendors during COVID-19 pandemic in Pretoria, South Africa.

Purpose of the study

The study explored factors influencing adherence to the usage of face masks by street vendors during COVID-19 pandemic in Pretoria, South Africa. COVID-19 pandemic represented a significant phenomenon of global proportions whose ramifications ought to be investigated.

Research design and methodology

The study adopted a mixed method approach as part of an exploratory descriptive survey design. The study involved street vendors as participants and were recruited from different sections around the Northern and Central parts of Pretoria. The study targeted vendors selling different items by the street sides, hawking, displaying or sitting in an area within these two major areas of Pretoria. In all, 257 participants were recruited for the study with 161 females and the males numbering 96. All participants were duly informed about the purpose of the study and were not coerced to participate in the study, they were only provided the questionnaire only when they have agreed to participate in the study. The survey was conducted in English and where necessary an interpreter assisted in explaining the question. Due to the background of the targeted population, questionnaire were either hand delivered following the COVID-19 rules or were sent a link on their phones where the questionnaires could be completed. It must be stated that, the study was conducted during Alert Level 1 in the country. The COVID-19 rules in the country was strictly adhered to. Alert

Level 1, stipulates that *“most normal activity can resume, with precautions and health guidelines followed at all times”*. These conditions were strictly followed, each participants were provided with a mask, and sanitizers were sprayed onto their hands for those who prefers to answer the questionnaire using the provided papers and before the collection of the papers, sanitizers were also sprayed onto their hands so as to prevent the spread of COVID-19 virus. The interviewers wore mask at all times during the survey period.

The questionnaire was divided into two main sections. The first section was on the socioeconomic and background information of the participants and this included the age, educational level, income generations and their gender. The second section sought to get information on the targeted questions that can either be discussed through the expression of their feelings or quantified. Participants were asked questions on their level of awareness of COVID-19, sources of information about COVID-19, beliefs about COVID-19 and the impact of the regulations such as wearing of face mask on their health and business. The possible answers were Agree, Disagree, Not sure. Quantitative data was analysed using SPSS version 26 while qualitative data was analysed using axial coding.

Results

The demographic data presented in Table 1 showed the demographic and geographical differences in some of the demographic data. 36.6% of the participants were males and 63.4% of were females which shows more females than males in the study. The participants' age group were largely between the ages of 18 – 45 and this amounted to 79% of the group that was interviewed. From the participants, it was noticed that most of them (82%) resides either in the location, township or the suburb of the city center. As regards the mode of selling their goods and items, 44% of the respondents do display their goods or items just by the roadside while hawking and sitting under the shed accounted for 22% and 21% respectively. 51% of those interviewed either have matric or below matric while one of the most surprising result of the study was the percentage with either Diploma or Degree totaling 13%. Monthly income generation from the business were mostly between R1000 – R5000 with just 12% of the respondents generating income above R5000. Mode of transportation to work station involved usage of train, taxi or buses but 23% indicated that they trekked to work. Table 1 that follows shows the demographic information.

Table 1: Demographic Data

Variables		Percentage
Gender	Male	36.6
	Female	63.4
Abode	City Centre	18
	Suburb	23
	Location	22
	Township	37
Age	18 - 25	35.6
	26 - 45	43.4
	45 - Above	21
Selling Mode	Hawking	22
	Under Shed	21
	Displaying	44
	Others	13
Education	Matric or Below	51
	High School	36
	Diploma	11
	Degree	2
Income per month	R1000 – R3000	22
	R3100 – R4000	31
	R4100 – R5000	35
	R5100 – Above	12
Transportation Mode to Work Station	Train	33.2
	Taxi	19.8
	Bus	24
	Trekking	23

72% of the respondent agreed that there is COVID-19 and that the disease is real, which may either affect their behavior towards prevention or management of the disease. Such a finding showed a reasonable awareness regarding the reality, presence and dangers around COVID-19 amongst the respondents. The remaining 28% who did not agree to the presence of COVID-19 were largely within the 18 – 25 years age bracket and labeled it as a “prank” by the government to source for money. One of the respondent says

“This is another method of collecting money from us and maybe if the government has taken the money of the people and looking for a way to cover up”.

Further inquiry showed that they saw it on the Television or heard it in the news or informed by the dreaded disease on the social media, but were not convinced on the presence of this disease and has largely affected their behaviors. Generally the mode of information as alluded to by most of the respondents were Television, Radio and to a large extent information provided on social media which was mostly through the WhatsApp messages.

A further probe to understanding participants reasons for not believing in COVID-19 pandemic revealed that, they had not directly witnessed anyone who died in their area or neighborhood as a result of COVID-19. One of the respondents said,

“We know everyone that comes here everyday and none of us has died of the disease, they say if you don’t use the mask, you gonna die, did you see me with any mask? Am alive”.

Despite the fact that majority of the respondent agreed that the COVID-19 disease is real, this did not align with their readiness to use face mask. The announcement by the government on the compulsory use of face mask was not a welcome idea from most of the respondent in this study. Only 19.7% of those who participated in this survey agreed that the use of face mask was necessary while 29.5% disagreed with the idea of using mask to prevent the spread of the disease and the remaining 50.8% were not sure if the decision by the government was necessary. From those who agreed that it was a good decision from the government, one of them mentioned that

“If they say it can prevent the spread, why not? Let’s use it so that we can be safe”

One of those who disagreed said.,

“If the government knows it is necessary and will prevent us from getting the disease,

they should give us free mask like they are doing with condoms, you see, they know,

HIV will kill us, so they gave us something to prevent it”.

Another person who disagreed on the protective nature of the mask also mentioned,

“Which one is cheaper, the mask or the vaccine that we can’t even produce, so they

know it will not work and that is why they ask us to use it, anyway, I don’t believe

there is this thing called COVID’ it is just a scam from the government”

The major challenges as reiterated by most of the respondents on the usage of mask was the issue of breathing and discomfort that comes with it. Most of the respondent especially those within the ages of 41 and above reported that breathing had become difficult especially when a mask is worn for a long time and that most of them relied solely on mask made from fabrics usually double layered with the assumption that this would prevent the virus from infecting them. Apart from the breathing problem mentioned by some of the respondent, few of them mentioned itchiness and irritability on the skin as their major concern.

A respondent reported issue of “dizziness” if they put on the mask for a very long period of time. Other problems associated with the usage of mask as mentioned by other respondent who participated in the study included the pain from the ears through the stripes, the tight fitness and the cost of purchasing the mask. A respondent mentioned,

‘A mask will cost you between 20 – 30 rands, I don’t have money to buy that, that is just too expensive for me, they should give us free.”

We observed just before the commencement of the study that wearing of mask by these group of individuals takes different forms and the question on the appropriate method of wearing mask was included in the questionnaire. Options such as wearing it on the chin, wearing it to cover nose and mouth, wearing it to cover the mouth and just putting in pockets just because of the law enforcement agents were included in the questionnaire. 61% of the respondents and largely from the age group of 26 and above were compliant and were largely female (78.2%) and they wear the mask covering the mouth and chin though they also mentioned that this will only be for a few minutes so that this can allow them to breath normally. The longest duration as mentioned from those that are wearing it ranged from 15 minutes to 1 hour at interval. None of the respondent interviewed mentioned that they could wear it longer than 1 hour at a stretch. 21% of the respondent indicated that they moved about with there mask but mostly in their pocket and this response was mostly from the hawkers and those displaying their items by the roadside. Major reasons gievn for failure to wear a mask (keeping it in the pocket) were that they could not t move freely when wearing mask as this affected their breathing and also would not be able to call on consumers to market their products. Generally from the study, women were those that are using the mask correctly and were largely those above 26 years of age.

The general feeling from the street vendors interviewed in this study on the use of mask was that it is not comfortable looking at all the discomfort associated with it (52%) and 21% mentioned that it is stressful going around or moving with a mask on. Those that agreed to the continuous use of mask though periodically depending on their ability to breath normally were just 15% of those interviewed in the study.

As mentioned by those that were interviewed in the study, the presence of COVID-19 has adversely affected their business and they wished the government could eradicate it at once if it was real. The response to the question on the impact of wearing of mask on their activities as street vendors was met with mixed feelings. Some participants mentioned that it had negatively affected their sales because it was difficult for them to attract or market their products to their customers while putting on the face mask. Others agreed that it was not actually the use of face mask that had affected their business but the lockdown regulations in general as a result of COVID-19.

Discussion

In terms of the knowledge- attitude-behaviour theory, the information on the presence and impact of the disease did not actually translate into behavioral changes among the participants who were interviewed in this study. Their behavior were mostly affected by their concern on making a living through their daily sales. Attitudes are influenced by strong beliefs and the outcome associated with such beliefs. The study of Mallinson and Hatemi (2018) demonstrated that the more susceptible a person is to the conformity pressure, more likely are they to change their opinion based on the norm set by the society. From our findings, some of the respondents failed to realize the impact of COVID-19 just because they had not experienced the impact directly. Hence, they were not under any

pressure to conform to the societal norms on the use of the mask. However, the few in this study that agreed on the presence and impact of COVID-19 agreed to the societal rules though they were also affected by other factors. In essence, it could be deduced from the comments and positions of those who failed to use the mask that lack of real awareness on the menace caused by COVID-19 is a major contributing factor to their behavior. Desai and Patel (2020) noted in a study set out on stopping the spread of COVID-19 that lack of awareness contributes to undesirable attitudes and practice, which leads to negative impacts on infection control and similar findings were noted in this study. Furthermore, as alluded to by some of the respondents, lack of positive experience has a great impact on their willingness to wear mask. A study conducted by Irfan et al. (2021) showed that the wearing of facemask largely by the respondents in their study was largely influenced by a positive experience. Another study in China conducted by Hamamura and Park (2010) showed that possible factors that motivate people to use masks included perceived reduced chances of being infected with SARS-CoV-2 and controlling the spread of airborne diseases.

The influence on gender and age disparity is another factor to be considered in this study. Those who were mostly young especially those who were between the ages of 18 – 25 were reluctant to accept the imposition of the use of face mask while those above the ages of 45 conforms generally to the use of the mask. Their behaviors might have been influenced largely on their health because of the presence of underlying diseases which might make them to become more susceptible to the disease and the regular information provided from the social media. However, the study of Alahdal et al. (2020) showed that people within the age group of 18–49 showed better attitude towards adherence to guidelines on COVID restrictions than those within the age group of 60 and above though the study did not specify the usage of mask in particular but mention in general adherence to COVID regulations. The increased usage of different social media channels as motivating factors for a change in attitude which was also alluded to in this study. The results of the study conducted by Irfan (2020) revealed that older people and females in Pakistan exhibit more protective behavior than other groups of society. Condon and Sinha (2010) had initially mentioned that females showed more willingness to use face masks than their male counterparts during the 2009 H1N1 swine flu pandemic which is similar to our findings.

The cost of face mask and the inability of the government to provide free masks if the COVID-19 was real was another factor mentioned in this study. This is similar to the findings of the study reported by Chughtai and Khan (2020) in Pakistan where it was noticed that the cost of face mask was a major factor hindering the population from using the face mask. Similarly, Weiss et al. (2004) had initially reported that public willingness to use face mask was influenced by cost and that high cost prevented individuals from buying face masks.

Looking at the age group of respondents that was interviewed in this study, the main motivating factor was their ability to sell and make money for their immediate family members. This factor has largely influenced their usage of face mask as this affected their mobility and marketing, especially when calling on customers and breathing. Breathing has been reported mostly in some studies has a major barrier to wearing of face mask. The findings from our study suggest

that the major barrier facing the participants is the inability to get patronage for their businesses. Although several COVID-19 relief funds were made available to the citizens, some of the respondents in this study were not South African citizens or permanent residents. Hence, they were not able to access the relief funds which made it difficult for them to cope during the hard lockdown with the result that they were mainly concerned about survival rather than the impact of the pandemic itself.

Conclusion

The study investigated factors responsible for the compliance with the usage of face mask as a form of prevention for COVID-19 among street vendors in Pretoria, South Africa. Knowledge regarding the presence and the devastating effect of the COVID-19 had no major effect on some as to the ability to sell and make money from their businesses. Other factors alluded to by the respondents in the study included the discomfort, breathing problem and the cost involved in the purchase of face mask. Age and gender also played a major role in their reactions towards the use of face mask and the adherence to the regulations imposed especially around the usage of face mask. Awareness seems to be a major factor and the participants expressed concerns about government readiness and willingness to assist in alleviating the burden induced by COVID-19 pandemic. From the study, it seems that the key factor influencing street vendors is the ability to provide for their immediate family and this shaped their view on the presence and reality of COVID-19 pandemic and usage of face mask. Despite the problems posed by the usage of face mask, majority of those interviewed indicated that they wore face mask when they felt it was necessary although using mask affected their breathing and brought some forms of discomfort.

Authors' contributions – Dr Olowoyo MM is a postdoctoral student with University of Johannesburg and conducted the field work along with other coauthors. The conceptualization and the design of the work. Dr L Mavuru assisted with conceptualization, design and editing of the work. Prof S Ramaila also assisted with conceptualization and editing of the manuscript.

Competing interests: Not applicable

Ethics approval – The ethical approval to conduct the research was received from University of Johannesburg.

Consent to participate – Consent to participate in the study was sought from all the participants before the questionnaire were given to them. The reason for the study was carefully explained to all the participants.

Data Availability statement: The data used in this study will be deposited at the university library and all other university repository for availability to a wider audience.

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