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RISK PERCEPTION AND THE PRACTICES TOWARDS COVID-19 AMONG THE GARMENT WORKERS IN BANGLADESH

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Abstract: *Coronavirus disease 2019 is caused by Novel corona virus (SARS-CoV-2). The World Health Organization declared it as Public Health Emergency of International Concern (PHEIC) on 30 January 2020 and as a global pandemic on 11th March 2020 (WHO). The first cases were detected in Bangladesh on 08th March 2020. The aim of the study was to assess the level of risk perception towards COVID-19 and the practices of preventive measures to fight against COVID-19 among the garment workers. A cross-sectional study was conducted from 20th December 2020 to 7th January 2021 among the garment workers of selected garment industries at Savar, Dhaka. The results show that the respondents well knew about COVID-19 as a viral, contagious disease and more than 94% knew that coronavirus infected patient needed isolation. The majority of the respondents (86.2%) got information about COVID-19 from television. Eighty percent of the respondents had a high-risk perception of being infected, the severity of the disease, and the possibility of death. Among the respondents, 76% had good practices of preventive measures of COVID-19. The study result showed that the level of risk perception had a significant positive relationship with the level of practices towards COVID-19 among the garment workers. It was recommended that emphasis should be given on awareness about COVID-19 which would enhance perceived risk and practices of precautionary measures towards COVID-19.*
Keywords: *risk perception, knowledge, practices, garment workers in Bangladesh, COVID-19*

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1. Introduction

Corona virus disease 2019 (COVID -19) is caused by Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2). It is an enveloped positive RNA viruses, family Coronaviridae and the order Nidovirales (Taghrir, Borazjani and Shiraly, 2020). SARS-COV, MERS-COV and the currently appeared SARS CoV-2 are corona viruses. SARS-COV-2 is included in Beta genus. The virus mainly causes respiratory illness (Hossain, 2020). SARS-COV-2 was first detected in Wuhan, Hubei province, China, in December 2019. This virus is alike with bats corona virus (more than 95%) and SARS-CoV-2 (more than 70%). It encompasses higher morbidity and mortality than other human corona viruses such as severe acute respiratory syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (Bruine de Bruin and Bennett, 2020).The basic reproductive number (R0) of SARS-CoV-2 is 3.28 which is greater than SARS (2.7) and 2009 pandemic H1N1influenza (2.4) (Harapan *et al.*, 2020). According to Li Q, et.al., Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-Cov-2) spreads from person to person through sneezing, coughing, touching contaminated objects referred in (Olum and Bongomin, 2020). This virus utilizes host receptor angiotensin-converting enzyme 2 (ACE2) to penetrate the cells that enhances the capacity of transmission from person to person. Its incubation period is 4 to 14 days and clinical symptoms of COVID-19 vary from mild to moderate respiratory symptoms. According to WHO report, more than 80% of cases had mild symptoms who recovered without medical intervention, 20% became critically ill cases (World Health Organization, 2020). Case fatality is depended upon the age of the individual, interconnected to comorbidities, isolation facilities accessibility and competency of health care systems. Mortality rate is more among the persons who are above 80 years (Bedford *et al.*, 2020). The main clinical symptoms of COVID-19 are fever, dry cough, sore throat, loss of taste or smell, fatigue, headache myalgia, dyspnea (Zhong *et al.*, 2020). Several severe complications are developed in COVID-19 patients such as acute distress respiratory syndrome (ARDS), hypoxemia, acute cardiac injury, acute lung injury, shock and arrhythmia. The worldwide case fatality of COVID-19 is 2.17. The first three cases were reported in Bangladesh on 8th March 2020 (IEDCR, 2020). Case fatality rate was 1.5% (DGHS, 2021). The extent and speedy proliferation of COVID-19 from symptomatic and asymptomatic patients made anxious to recognize the behavioral action of people (Ferdous *et al.*, 2020).

The declaration of complete lock down came from Bangladesh government on 24 March to 4 April, which was extended till 25 April 2020. Recently some vaccines against Covid-19 have been available such as Pfizer- BioNTech Covid-19 vaccine, Moderna Covid-19 vaccine, and Oxford–AstraZeneca COVID-19 vaccine. It is hard to make available COVID-19 vaccine for all within short time. Hence, prevention is the main way to get rid from it. To attain success against COVID -19, effective control measures are necessary.

Risk perception is a part of individual's decision making process which affects compliance with public health messages for optimistic behaviors (Mainous, 2020). Bangladesh is one of the most vulnerable countries in South Asia, regarding spread of COVID-19 among different segments of working people like health care providers,

bankers, law enforcing personnel, media people, readymade garment (RMG) workers and other industrial labor. Closing almost all sectors, the government within few days allowed by the demand of the export oriented RMG industries to open proper instructions regarding COVID-19 and declared incentive packages. In worse circumstances, the garment workers protested on the street for their payment, violating the lockdown. Hence, the RMG workers became more exposed to be affected by the COVID-19. However, this study entailed the knowledge, risk perception and practices of COVID-19 among the garment workers in Bangladesh.

Bangladesh is one of the leading clothing exporters, second position in the world. There are 4621 garment factories in Bangladesh, where 4.2 million of people are working. In pandemic situation the low socio-economic vulnerable population of garment workers (Chowdhury, N. J &Ullah, 2010) should be aware about this infectious disease which help them to prevent the infection. The aim of this study was to assess risk perception and practice towards COVID -19 among garment workers in Bangladesh.

COVID-19 as a new disease so there is no specific treatment available. The best way is prevention of the disease. The prevention of an infectious disease mainly depends upon knowledge, risk perception, attitude, and practices of people regarding the disease. The Health Belief Model developed by Janz and Becker in 1984, explains the necessity of risk perception and practices (van der Pligt, 1996). The aim of the study was to assess risk perception and practices on COVID-19 among garment workers in Bangladesh in respect of socio-demographic and working environment factors. Hence this study was confined to see the level of knowledge, risk perception and practices and socio-demographic and working environment factors among the garment workers in Bangladesh. Though there are many studies on knowledge, attitude, and risk perception and health behavioral practices regarding COVID-19 worldwide on different content and context especially on health care providers. However, the present study was totally different in content and context of garment workers in Bangladesh. It was expected that the findings of the study will benefit the future epidemiological research work, contribute to the existing literature of health behavioral science as well as at the policy level to take necessary steps for prevention and control of COVID-19. This study also tried to facilitate the future researchers to find out and compare the condition of Bangladesh and other countries.

This study attempted to reveal the answer of the question of what is the level of risk perception and the practices towards COVID-19 among the garment workers with specific objectives are i) to assess the level of knowledge among the garment workers about COVID-19; ii) to assess the perceived risk to be infected by COVID-19 among the garment workers; iii) to identify the practices of preventive measures regarding COVID-19 among the garment workers and to explore the relationship between risk perception and practice regarding COVID-19 of garments workers. This study is not beyond some limitations as I was employed convenience non-probability sampling technique. The garment factories were selected conveniently so it is difficult to generalize the findings. A cross-sectional study design was used so causal inferences may not be established.

2. Literature Review

COVID-19 influenced the global economic condition such as shipping, leisure, tourism, luxury commodities. Garment industry is one of the most vulnerable sectors as China is the core country for raw materials of garment industry where COVID-19 began (Sen, Ahmed, *et al.*, 2020). In Bangladesh garment industries drive the country's economic growth, contributing to economic growth rate. Large percent of population are working in this sector (Chowdhury, N. J & Ullah, 2010). Garment workers are more vulnerable for various diseases especially infectious disease like COVID-19 (Sen, Antara, *et al.*, 2020). They also (Sen, Antara, *et al.*, 2020) stated that in pandemic situation garments workers have to work with minimal safety measures and social distancing is not maintained properly in most of the garment factories.

2.1. Knowledge

Knowledge regarding COVID-19 includes learned about cause, transmission of the disease, symptoms, prevention and control of the disease. Zhong *et al.*, 2020 in their first study on knowledge, attitude and practices regarding COVID-19 found that 90% of respondents had high knowledge about COVID-19 and high knowledge had an important association with improvement of practices and optimistic attitude. Azlan, 2020, in a study found that respondents had moderate knowledge scores, answered 80.5% correctly of knowledge related questions regarding COVID-19. A study on general people of Iran showed that 60.8% respondents had moderate knowledge about COVID-19 and also established that male gender, non-health care occupations, single and lower education level were significantly linked with lower knowledge scores (Erfani *et al.*, 2020). A study by Al-Hazmi*et al.* (2018) demonstrated that most of the respondents mentioned that hand washing was the method of prevention of spreading the disease.

2.2. Importance of sources of information

Polling by Reuters in United State found that Internet is the best source of information; other important sources are Face book, Twitter, television, radio, and newspaper. Sources of information have important role on risk perception and health behavior. In pandemic situation all the countries in the world campaign on preventive measures and raise awareness about COVID-19. Ronald (2020), in their study revealed that 78% used mass media and 76% used social media as source of information. Luu and Huynh (2020), in their survey evaluated that geography and social media were two significant determinants of perception and social media had optimistic effect on risk perception and practices of preventive measures

2.3. Risk Perception

Risk refers to the likelihood of loss which consist of chance and severity of harmful effect (van der Pligt, 1996). Risk perceptions are beliefs about potential harm or the possibility of a loss. Risk perception has three dimensions 1) perceived likelihood

2) perceived susceptibility 3) perceived severity (Darker C. 2013). On the other hand, (Cori *et al.*, 2020) stated that elements which enhance or diminish risk perceptions are voluntariness, knowledge, visibility and trust Dryhurst *et al.*, 2020, found in their study that trusts on government negatively associated with risk perception and personal knowledge had positive relationship with risk perception. More precisely, Bruine de Bruin and Bennett (2020), in their investigation evaluated a strong positive relationship that participants who perceived higher risk executed more protective health behaviors.

2.4. Practices on Covid-19

Xiao and Torok (2020) stated that main important have to be given on epidemiology of the infection, clear idea about risk of it. The education must be scientific. Prevention and control of the infection is the greatest approach to get free from it. Using face mask is the key method suggested by The World Health Organization (WHO) and the United States Centers for Disease Control (CDC). Aruhomukama *et al.* (2020) in their study estimated that 77.0% participants had knowledge of right procedure of face masking and older people and male participants had less trust that face masking is a good preventive measure against COVID-19. Similarly, a study by Abdulah *et al.* (2020) explored that 69.2 % of respondents utilized face masks or tissue papers during coughing or sneezing in public places, 94.6% practiced hand hygiene and 84.6% cleaned suspected contaminated areas by disinfectants.

2.5. Working environment

The health and security of industrial employees in Bangladesh are provided by the Bangladesh Labor Act 2006. Section 51 to 60 on Health and Hygiene related provisions. Section 61 to 78 are safeguard in case of fire, frame of apparatus work on or near machines in motion hoist and extreme **w**eights carrying (Rashid, Rashid, 2015). On the other theme, Md. Lokman Ali (2017) refers that environmental factors may be direct factors and indirect factors. Direct factors are interconnected to workplace like physical atmosphere of the garments, salary, and work hours, behaviors of supervisors, healthcare services, and sexual annoyance. Indirect factors are related to living place and during traveling to workplace and workplace to home

2.6. Theoretical models of health behavior

Protection motivation theory was developed in 1975, by Dr. R.W Rogers which stated two parts one is threat assessment process that depends upon the severity and the vulnerability of the event and the rewards. Another one is the coping appraisal procedure which refers to how an individual reacts to the event and comprises of efficacy and self-efficacy and reaction expenses. In 1983 Dr. R.W Roger recognized five possible copping modes- i) inhibition of a action ii) single act iii) repeated act iv) multiple act v) repeated multiple acts (Clubb and Hinkle, 2015). Meta-analysis conducted by Floyd, Prentice-Dunn and Rogers in 2000 identified that severity, response efficacy and self-efficacy had positive relationship with preventive behaviors while rewards and response expenses had negative correlation (Prentice-Dunn, McMath

and Cramer, 2009).A study by Rad, 2020based on the Protection Motivation Theory (PMT) identified that motivation protection was significantly associated with protective behavior regarding COVID-19.

Additionally, there are several models those are developed to clarify why individual follow protective actions or why not. The major models are i) Cost-benefit model which derived from value expectancy theory, ii) environmental or contextual model and iii) behavior change process itself (DeJoy, 1996). **Value expectancy theory** explains that individual evaluate the severity of risk, cost, and benefit of measures. Weinstein, (1993) described that this theory has four common features a)inspiration for self-defending behavior b) perception about the possibility of negative consequence of the event c)stimulus that the action will decrease the likelihood of the damage d)impulse that the projected benefits of a meticulous deed must be reflected on the anticipated expenditure of taking action (DeJoy, 1996). Correspondingly, **health belief model** refers five elements, as such a) perception of vulnerability to health outcome b) perceived severity of the event c) the perceived profit interrelated to explicit action d) the perceived difficulty allied with the particular action e) specific cues to action (DeJoy, 1996). Furthermore, **transtheoretical model** came out from a comparative analysis of important theories of psychotherapy and behavior change. Prochaska and colleagues stated the process of behavior change that has 5 principle steps a) precontemplation b) contemplation c) preparation d) action e) maintenance referred by (DeJoy, 1996).

2.7. Risk perception and practices towards COVID-19

Kwok *et al.* (2020), in their study in Hong Kong, revealed that 89% respondents had high perception of susceptibility to be infected with COVID-19 and 97% were highly perceived of severity of the disease Serwaa *et al.*, 2020, in their study showed that 61.7% respondents had excellent knowledge regarding COVID-19, 68.3% covered high risk perception and 81.4% had moderate preparedness ability to take action against COVID-19.A study by Kebede *et al.* (2020) demonstrated 41.3% respondent had high knowledge regarding COVID-19, 77.3% frequently wash their hands and 53.8% kept away themselves from hand shaking(Kebede *et al.*, 2020). Alsoghair *et al.* (2021) in their study demonstrated that 94.1% of respondents had high level of protective behaviors against COVID-19; also found that risk perception and preventive behaviors was positively correlated. A study made a comparison between uses of face mask before and after epidemic and showed the wearing of face mask was highly increased during pandemic (97.4%) than before outbreak (11.3%) of COVID-19 (Chan *et al.*, 2020). Abdelrahman (2020), in their study, found that more than 95% respondents stated that they applied cleanliness and hand hygiene; also showed that carefulness, neuroticism, threat perception influenced the practice of social distancing.

3. Methods and Resources

A cross sectional study was done for measuring the level of knowledge, risk perception and practices towards COVID-19 among the garment workers. The study population of this research was both male and female garment workers who had been working in the selected garment industries for the last six months of data collection at the age of 18

years and above and management personnel. Previous studies were considered. In their study, Kyaw S. Mya and others carried out about perceived risk among adults at Yangon and Bago regions in Myanmar and found that 22.8% in high risk perception category (Mya *et al.*, 2020). It was considered 22.8% proportion of high-risk perception for getting the sample size of 299 but the actual number of respondents was 305. Convenience, non-probability sampling technique was applied, and samples were selected from the garment factories located at Savar, Dhaka. Observation and face to face interview methods were performed and a semi-structured questionnaire and checklist were developed, and SPSS and Excel were used for data analysis. Both descriptive and inferential analysis were performed.

Ethical consideration

The Institutional Review Board (IRB) of The National Institute of Preventive and Social Medicine (NIPSOM) provided an ethical clearance of the study. An informed consent was obtained from each respondent explaining the objectives, purposes, procedures, probable risks, and benefits. The respondents were reassured that strict confidentiality will be maintained in data handling, processing, and analyzing and the data would be used only for academic purposes with anonymity.

4. Results of the Study

The data analysis was done using descriptive statistics for getting mean, median, standard deviation, frequencies, and percentages. Bivariate correlation was used to find relationship between two continuous variables. In addition, chi squared test was used to compare categorical variables. The results are illustrated in this section with tables and diagrams.

4.1. Socio-demographic characteristics of the respondents

The total number of respondents was 305 for this study. The results showed that most of the (38.0 %) respondents age18-25 years, the mean age of the participants 28.40 years with SD ±5.70, the maximum age was 47 years and minimum age was 18 years. Among 305 participants 40% were male, and 60% were female. The most of the participant's religion in this study was Islam (84.3%),79% were married. This study illustrated that about half of the spouse's occupation was garment worker (45.6 %), 19% service, 11.1% business, 6.6% others such as farmer, housewife, 1.6% are unemployed. About half of the participant's educational status was secondary (47.87%), 26.89% was primary, 20.66% was higher secondary, 3.61% was undergraduate and 0.98% was Master's level. The majority of the spouses had completed secondary level education (49.2%), 25% primary, 22.7% higher secondary, 2.7% undergraduate and only 0.4% Master's level of education. The minimum and the maximum number of residents in a room was 1 and 8 respectively. Majority of the respondents 178 (58.4%) answered the number of residents was 1-3. The table below demonstrated that

participants mainly living with nuclear family about 41%, 39.7% live in sublet, 19.3% living with joint family.

4.2. Knowledge on COVID-19

COVID-19 is a viral disease. Table 1. provided the information about the knowledge of the participants about the type of COVID-19 disease. 94.4% participants answered that COVID-19 was a viral disease, 2% answered that it was not a viral disease and 3.6% answered that they did not know the type of the disease (See Table1).

Table 1. Distribution of knowledge about COVID-19 as a virus

n=305

COVID-19 a viral disease	Frequency	Percentage (%)
Yes	288	94.4
No	6	2.0
Don't know	11	3.6
Total	305	100.0

Corona virus is contagious. All the participants responded the question about contagiousness of the virus. The table below demonstrated that most of the participants answered that corona virus was contagious and 4.6% answered that it was not contagious and 8.5% answered that they didn't know (See Table 2).

Table 2. Distribution of knowledge as corona virus is contagious

n=305

Corona virus is contagious	Frequency	Percent
Yes	265	86.9
No	14	4.6
Don't know	26	8.5
Total	305	100.0

Knowledge regarding symptoms of COVID-19. All the participants responded the multiple questions and individual responded differ from each other.97.7%answered fever as a symptom of COVID-19, 59.3% responded headache, 77% reported dry cough, 72.8% answered sore throat, 34.4% answered weakness, 63% answered breath difficulties, 26.2% responded tiredness, 27.2% answered nasal congestion, 24.6% answered diarrhea, loss of taste or smell answered 12.5% and 0.7% said that they didn't know (See Table 3).

Table 3. Distribution of knowledge on symptoms of COVID-19 frequencies

n=305

Symptoms of COVID-19	Frequency	Percentage
Fever	298	97.7%
Headache	181	59.3%
Dry Cough	235	77.0%
Sore Throat	222	72.8%
Weakness	105	34.4%
Breath Difficulties	192	63.0%
Tiredness	80	26.2%
Nasal congestion	83	27.2%
Diarrhea	75	24.6%
Loss of Taste or smell	38	12.5%
Don't know	2	0.7%

* (Participants selected multiple answers)

Knowledge about preventive measures of COVID-19. The respondents were asked about the preventive measures of COVID-19. The respondents opined hand washing with soap (99.3%), wearing face mask (79%), using hand sanitizer (66.6%), maintain social distancing (56.7%), avoid public gathering (49.2%), maintain cough etiquette (39.7%) and vaccine 16.1% (See Table 4).

Table 4. Knowledge about preventive measures of COVID-19

n=305

Preventive measures of COVID-19	Frequency (Yes)	Percentage (%)
Hand washing with soap	303	99.3
Using hand sanitizer	203	66.6
Wearing face mask	241	79
Maintain cough etiquette	121	39.7
Avoid public gathering	150	49.2
Maintain social distancing	173	56.7
vaccine	49	16.1
Don't know	0	0
others	2	0.7

*(Participants selected multiple answers)

Knowledge regarding spread of COVID-19. The participants were asked about the way of spreading COVID-19. All the participants (100%) said that COVID-19 spread through sneezing, 72.1% answered through coughing, 61.6% responded touching contaminated objects and only 0.3% said that they didn't know. (See Table 5)

Table 5. Distribution of knowledge about spreading COVID-19

n=305

Spread of COVID-19	Frequency	Percentage
Sneezing	305	100.0%
Coughing	220	72.1%
Touching object	188	61.6%
Don't know	1	0.3%
others	12	3.9%

*****(Participants selected multiple answers)

Isolation of infected person. The table revealed that 94.4 % participants answered that isolation was necessary, 0.7% said that isolation was not necessary and 4.9% responded said they did not know about isolation of COVID-19 infected patient. (See Table 6)

Table 6. Distribution of knowledge about isolation of infected person

n=305

Isolation is necessary for the infected person	Frequency	Percent
Yes	288	94.4
No	2	0.7
Don't know	15	4.9
Total	305	100.0

Knowledge about quarantine. The study measured knowledge of the participants about quarantine. The table described that 68% participants agreed that quarantine was required for those who had exposed to COVID-19 infected person. 64.7% said that in quarantine people stayed separated in institution or at home at least 14 days. 27.4% participants answered that quarantine helps to prevent spread of COVID-19 and 7.3% answered that they did not know about quarantine (See Table 7).

Table 7. Distribution of knowledge about quarantine

n=305

Quarantine of COVID-19	Frequency	Percentage
Quarantine is required for those who have had exposed to someone with COVID-19	206	68.0%
In quarantine people stay separated at home or institution for at least 14 days.	196	64.7%
Quarantine helps to prevent spread of COVID-19	83	27.4%
Don't Know	22	7.3%
Others	4	1.3%

*(Participants selected multiple answers)

Sources of information. The participants were asked about the sources from where they were informed about COVID-19. The respondents had option to select multiple answers. Majority of them about 86.2% selected television as a source of information, the next option was social media which was 68.5%, newspaper was 50.5%, radio was 41.6%, 35.7% from working institutions and only 15.4% were answered that they had got information from health personnel (See table 8).

Table 8. Distribution of source Information

n=305

Sources of information of COVID-19	Frequency	Percentage
social Media	209	68.5%
Newspaper	154	50.5%
Television	263	86.2%
Radio	127	41.6%
Health Personnel	47	15.4%
Working institutions	109	35.7%
Family members, relatives and friends	78	25.6%
Others	10	3.3%

*(Participants selected multiple answers)

4.3. Level of risk perception

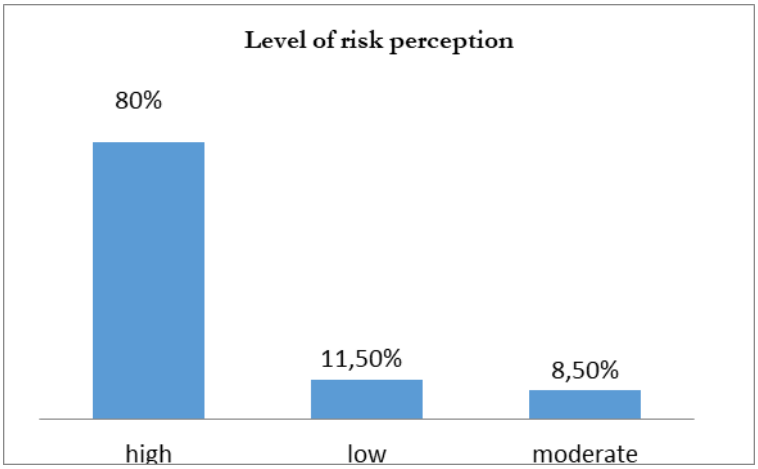
Most of the participants perceived that they had possibility of getting infection. 216 (70.8%) answered likely, 44.4(14.4%) said very likely, 23(7.5%) participants answered don't know, 17(5.6%) said unlikely, and only 5(1.6%) answered very unlikely. The majority of the respondents perceived that the chance of transmission of COVID-19 through colleagues was likely (54.1%), very likely (39%), unlikely 3.3%, only 03% very unlikely. Among the participants 3.3% answered that they did not know. 52.5% participants seemed that likely to spread of the infection to their family member, 37% very likely, 5.9% unlikely, 3% did not know about the possibility and only 1.6% thought very unlikely.

The results showed that 50.5% participants perceived that after getting infection severity of COVID-19 was very likely, 33.8 % likely. Only 0.7% thought that severity of the disease was very unlikely. The perception about death from COVID-19 was 42.6% likely to death, 41% very likely, 1% thought very unlikely and 14.4 answered that they did not know. There were five questions about risk perception which answers were arranged in five-point Likert scale. The mean score of risk perception among the participants was 4.061 with standard deviation (± 0.04828). The maximum score was 5.00 and the minimum score was 1.00.

Risk perception was categorized by utilizing original Bloom's cut-off point. Participants who obtained 80-100% points (4-5 average score) classified as high-risk perception, who acquired 60-79%points (3-3.9 score) categorized as moderate risk perception and those who got below 60% points (<3 score) was considered as low risk perception.

According to the calculation the table displayed that among the respondents 80% had high risk perception, 8.5% had moderate risk perception and 11.5% had low risk perception. (See Figure 1)

Figure 1. Level of risk perception



isk perception, 19.8% had moderate risk perception and 11.6% had low risk perception. Among the female 64.5% had high risk perception, 20.8% had moderate risk perception and 14.8% had low risk perception. The finding showed that male had higher risk perception than female participants (See Table 9)

Table 9. Distribution of level of risk perception between genders

n=305

Gender	Risk perception level			Total
	High	Moderate	Low	
Male	99 (68.6%)	11 (19.8%)	12 (11.6%)	122
Female	145 (64.5%)	15 (20.8%)	23 (14.8%)	183
Total	244	35	26	305

4.4. Level of practices towards COVID-19

The participants were asked about their daily practices to fight against COVID-19. The answered were designed with five-point Likert scale. The average mean scores of preventive practices were 4.1779±0.58. The results displayed that most of the

participants (54.1%) washed their hands with soap frequently, 29.2% always, 15.7% sometimes and rest of the participants answered rarely (0.7%) and never (0.3%). 68.2% participants put on face mask always during going to outside, 24.3% frequently, 5.6% sometimes. only 5(1.6%) answered that they used face mask rarely (See Table 10).

Table 10. Practices towards COVID-19

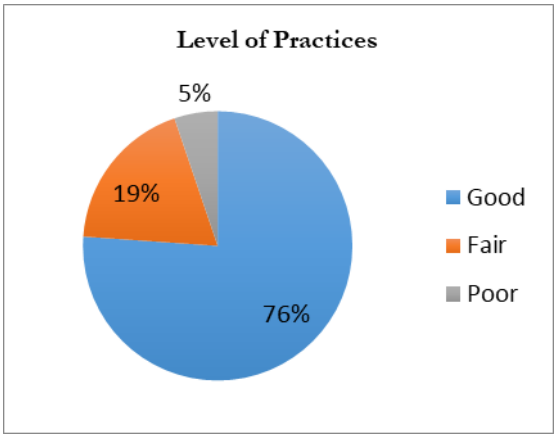
n=305

Practices towards COVID-19	Never (%)	Rarely (%)	Sometimes (%)	Frequently (%)	Always (%)	Total (%)
Hand washing with soap	0.3	0.7	15.7	54.1	29.2	100.0
Use of face mask	0.0	1.6	5.6	24.3	68.5	100.0
Maintain cough etiquette	0.0	0.7	12.1	30.5	56.7	100.0
Maintain physical distancing	1.0	5.6	13.8	24.9	54.8	100.0
Avoid sick person	5.2	4.9	3.6	24.9	61.3	100.0
Avoid touching with unclean hand	27.9	4.6	10.5	29.8	27.2	100.0
Avoid public gathering	2.0	3.9	9.2	31.1	53.8	100.0
use of hand sanitizer	2.0	5.6	14.1	33.1	45.2	100.0

Majority of the participants (56.7%) always maintained cough etiquette, 30.5% frequently and the remaining of the participants answered sometimes (12.1%), rarely (0.7 %.). 54.8% participants replied always maintained physical distancing during working hour, 24.9% frequently, 13.8% sometimes and the rest of them maintained rarely (5.6%), never (1%). Most of the participants (61.3%) avoided meeting sick and infectious persons always.24.9% participants answered that they avoided frequently, and remaining 3.6% sometimes, 4.9% rarely and 5.2% never avoided meeting sick persons.29.8% participants answered that they frequently avoid touching face, nose, eyes by unclean hands, 27.2% always, 10.5% sometimes, 4.6% rarely and 27.9% never avoided to touch. Most of the respondents (53.8%) avoided public gathering, 31.1% frequently, 9.2% sometimes and 2% never kept away from public gathering.45.2% participants answered that they always used hand sanitizer, 33.1% frequently used, 14.1% sometimes used, 5.6% rarely used and 2% never used hand sanitizer.

Level of Practices. The score of practices was simplified by using of Bloom's cut-off point. The participants who secured 80-100% points of score were judged as good practice, points within 60-79% were considered as fair practice and the participants whose score below 60% were categorized as poor practice. The table depicted that 76% participants had good practice, 19% had fair practice and 5% had poor practice. (See Figure 2).

Figure 2. Level of practices



Gender and level of practices towards COVID-19. The results revealed that among the male respondents 77.87% had good practice, 17.21 % had fair practice and 4.92 % had poor practice. Among the female respondents 74.86 % had good practice, 19.67% had fair practice and 5.46 % had poor practice of preventive measures regarding COVID-19. (See Table 11). The finding showed that male had higher risk perception than female respondents.

Table 11. Distribution of level of practice between genders

n = 305

Gender	Practice level			Total
	Good	Fair	Poor	
Male	95 (77.87%)	21 (17.21%)	6(4.92%)	122
Female	137 (74.86%)	36 (19.67%)	10 (5.46%)	183
Total	232	57	16	305

4.5. Distribution of respondents that had fever

In the study participants were asked about fever in last six months, among 305 participants 41.0% answered yes and 59.0% replied no. The respondents, who were suffering from fever in last six months, performed COVID-19 test 14.1%. All the test results were negative (See Table 12 and 13).

Table 12. Distribution of respondents had fever

n = 305

Fever in last six months	Frequency	Percent (%)
Yes	125	41.0
No	180	59.0
n	305	100.0

Table 13. Distribution of respondents had COVID-19 test

n = 125

COVID-19 test	Frequency	Percent (%)
Yes	43	34.4
no	82	65.6
Total	125	100.00

4.6. Distribution of family members of respondents had fever

The participants were requested to provide information about fever in last six months of their family members. The results demonstrate that 79 (25.9%) participant's family member had symptoms like fever and 74.1% had no symptoms. Having COVID-19 related symptoms like fever among the family members of the respondents got tested COVID-19 24 (30.4%). Among them 2 (8.3 %) of family members were found COVID-19 test positive (See Tables 14, 15 and 16).

Table 14. Distribution of family member had fever

n=305

Fever of family member	Frequency	Percent (%)
Yes	79	25.9
No	226	74.1
n	305	100.0

Table 15. Distribution of family member had COVID-19 test

COVID-19 test	Frequency	Percent (%)
Yes	24	30.4
no	55	69.6
Total	79	100

Table 16. Distribution of COVID-19 test results of family members

COVID-19 test results	Frequency	Percent (%)
Positive	2	8.3
Negative	22	91.7
Total	24	100.00

4.7. Association of socio demographic characteristics with level of risk perception and level of practice

Among the socio demographic characteristics age and housing status of the participants had significant relationship with level of risk perception. Participants of age 32- 39 years had high risk perception (86.8%) which is statistically significant ($p<0.029$). participants were living in sublet had high risk perception (89.3%) which is statistically significant ($p<0.0001$) (See Table 17 and 18).

Table 17. Age of the respondents and level of risk perception

n = 305

Age group of respondents	Level of risk perception				χ2 test value	df	p-value
	High f(%)	Moderate f (%)	low f(%)	Total			
18- 25 years	88 (75.9%)	12 (10.3%	16 (13.8%)	116			
25-32 years	94 (82.5%)	11 (9.6%)	9 (7.9%)	114	17.083	8	0.029
32-39 years	59 (86.8%)	2 (2.9%)	7 (10.3%)	68			
39-46 years	3 (50.0%)	1 (16.7%)	2 (33.3)	6			
46 years and above	0 (0.0%)	0 (0.0%)	1 (100.0%)	1			

Table 18. Housing status and level of risk perception

n = 305

Housing of respondents	Level of risk perception			Total	χ2 test value	df	p-value
	High f (%)	Moderate f (%)	low f (%)				
Living with joint family	44 (74.6%)	11 (18.6%)	4 (6.8%)	59			
Sublet	108 (89.3%)	6 (5.0%)	7 (5.8%)	121	22.350	4	0.0001
Living with nuclear family	92 (73.6%)	9 (7.2%)	24 (19.2%)	125			

Socio demographic characteristics and level of practice. Respondents who were living in sublet had good level of practice (90.1%) that is statistically significant (p<0.0001). Other socio demographic characteristic had no significant relationship with level of practice towards COVID-19 (See Table 19).

Table 19. Housing status and level of practice

n =305

Housing of respondents	Level of practice			Total	χ2 test value	df	p-value
	Good	Fair					
	44 (74.6%)	14 (23.7%)	1 (1.7%)				
Living with joint family	109 (90.1%)	10 (8.3%)	2 (1.7%)	59			
Sublet	89 (63.2%)	33 (26.4%)	13 (10.4%)	121	28.403	4	0.0001
Living with nuclear family	44 (74.6%)	14 (23.7%)	1 (1.7%)	125			

4.8. Relationship between Risk perception and Practices of COVID-19

Relationship between average risk perception and average practices towards COVID-19 was examined by using descriptive statistics tools. The result shows that the mean value of perception of COVID-19 by the respondents is 4.0610 with standard deviation of (± 0.84313) and the mean value of the practices towards COVID-19 is 4.1975 with standard deviation of (± 0.69027) where N was 305. The result clearly indicates that the mean of average practices is higher than the mean of risk perception. The study used bivariate correlation to establish the relationship between risk perception and the practices. The result illustrates that the value of Pearson correlation coefficient r=0.224, N=305, p value <0.0001. This finding represents that there is a weak positive correlation which is significant at the 0.01 level (See Table 20).

Table 20. Relationship between average risk perception and the practices towards COVID-19

n=305

Characteristics	**Correlation coefficient (r)**	**p-value**
Average risk perception and average practices of the participants towards COVID-19	0.224	0.0001

The results demonstrated that 80% of the participants had high risk perception. Chi square test showed that among the participants of having high risk perception 80.3% had good practice, 16.0% had fair practice and 3.7% had poor practice of preventive behaviors of COVID-19. The table also displays that 11.5% of participants had low risk perception, among them 54.3% had good practice, 34.3% had fair practice and 11.4% had poor practice. 8.5% of the participants enclosed moderate risk perception. Participants with moderate risk perception 65.4% had good practice, 23.1% had fair practice and 11.5% had poor practice. The results obviously depict that the participants having higher risk perception had higher tendency of good practice of protective behaviors against COVID-19 (See Table 21).

Table 21. Association between level of risk perception and level of the practices towards COVID-19

n=305

Level of risk perception	Level of practice			Total	χ2 test value	df	p-value
	Good f(%)	Fair f (%)	Poor f (%)				
High	196 (80.3%)	39 (16.0%)	9 (3.7%)	244	14.576	4	0.006
Moderate	17 (65.4%)	6 (23.1%)	3 (11.5%)	**26**			
low	19 (54.3%)	12 (34.3%)	4 (11.4%)	35			

The results displayed that the calculated Pearson Chi-Square value at df 4, p 0.05 is 14.576 which is greater than tabulated Chi-Square value ($\chi 2$4, 305) =14.576, p=0. 006. The result showed p value is 0.006 which is significant

4.9. Observation on working environment

The management personnel were asked about the protective measures that were taken in their institutes. They were inquired that the institute maintained physical distancing during working hours, supplied hand sanitizer or soap, face mask and provided adequate water supply. The answer of these questions was dichotomous. The administrative personnel of all factories provided the positive response. It was observed that the measures were taken by the management of garment factories to prevent COVID-19.

5. Major findings and discussions

On the basis of objective of assessing the level of risk perception and the practices towards COVID-19 among the garment workers and to estimate the relationship between risk perception and the practices, this section made an effort to examine the results aligned with the research objectives and the variables of the study. Moreover, it has been attempted to discuss the major findings of this study with existing literatures

and related previous studies of other scholars on knowledge, attitude, risk perception and the practices about COVID-19.

5.1. Socio-demographic characteristics

Female and male respondents of this study were 60% and 40% respectively. Mean age of the participants was 28.40 years with SD±5.696 and median age was 27.39years. Most of the participants were Muslims (84.3%) and 79% participants were married. Among 305 respondents 32.8% lived in a room with three members. Majority of respondents (47.9%) and their spouse (41.3%) completed secondary level of education. It was found that 45.6% of the participant's spouses were working in the garment industries and only 1.6% was unemployed. Similarly a study was conducted among garment workers revealed that most of the participant's age was20-22 years, male (51.8%) were slightly higher than female (48.2%) participants, 58.2% had completed secondary level of education which was higher than the study (47.9%), 60% were living with nuclear family which was alike the study , 57.3% lived in sublet in colony which was lower proportion the study (39.7%) (Abdullah-Al-Nahid, 2019).

5.2. Knowledge regarding Covid-19

The study revealed that the largest part of the participants answered that symptoms of Covid-19 were fever (97.7%), dry cough (77%), and sore throat (72.8%), difficulty in breathing (63%), headache (59.3%), and diarrhea (24.6%).Mya *et al*., 2020, in their study found that57.4% replied fever, 59.4% cough, and 36.1% difficulty in breathing, 14.1% fatigue and 1.7% mentioned diarrhea as symptoms of Covid-19 (Mya *et al*., 2020). Similarly a study revealed more than 91% respondents mentioned fever was a symptom of COVID-19 next 78.4% difficulty in breathing, 55.1% headache, 49.8% sore throat and 16.4% diarrhea (Wadood, Mamun and Rafi, 2020).Similarly, Zegarra-Valdivia, Ames-Guerrero, 2020, in their study in Peru found alike the results of this study. A study conducted among health care workers (HCWs) in Vietnam, 99.1% participants answered that Covid-19 is a viral disease, 67% knew that the virus is spread by close contact with the infected person and more than 98% opined that it could be prevented by hand washing with soap and using face mask(Huynh *et al*., 2020) , this percentage were higher than this study.

Source of information. Among 305 respondents two hundred sixty-three got information from television, 203 participants searched out information from social media, 154 from newspaper, 109 from radio, 109 from working places, 78 from family members, relatives, and friends and only 47 from health personnel. Another study showed that most of the respondents grasped information from mass media(81.5%) and other sources which is higher than this study (Olapegba *et al*., 2020).

5.3. Risk perception about COVID-19

This study estimated that the mean and median of average risk perception is 4.0610± 0.84313 and 4.4 respectively. The results show that 80% assumed high risk, 8.5%

moderate and 11.5% low risk perception level. A similar type of study in Kurdistan Region, Iraq found that6.9% participants had perceived risk of being infected by corona virus highly likely, 4% respondent perceived risk of severity of illness and 5.7% participants perceived risk about death by COVID-19 was highly likely (Shabu, 2020).In this study the participants answered very likely about getting infection (41.7%), severity (50.5%) and possibility of death by COVID-19 (41%). In comparison of the risk perception level was higher among the participants of this study than the study in Iraq. A study by Hussain *et al.*, 2020, estimated risk perception was slightly higher in male (68.6%) than the female (64.5%). A study in South Korea showed that the risk perception was equal between male and female respondents (Husnayain *et al.*, 2020).

5.4. Practices towards Covid-19

The findings showed that the mean and median of average practice was 4.1779±0.58798 and 4.3750 respectively. Level of practice revealed that76% participants executed good practice, 19% carried out fair practice and 5% had poor practice. The extent of good practice (76%) was higher in compared to other study conducted in Gamo zone, southern Ethiopia (35.3%) (Abera Mersha1 et al., 2020). Other studies conducted in Bangladesh showed that the level of good practice among the respondents was71% (Wadood *et al.*, 2020) and in Iran 16.7% participants showed excellent practice (Erfani, Shahriarirad and Ranjbar, 2020) which were lower than this study. On the other hand a study demonstrated that 88.7% respondents had good practice(Muhammad saqlain et al., 2020). SimaRugarabamu, Marium Ibrahim, 2020, in their study showed that the participants avoided visiting crowded place (77%) and used face mask during going outside (80%) that rate were higher than this study. A similar study in Nepal showed that among the participants 93.4% practiced social distancing and 94.7% practiced hand washing (Hussain *et al.*, 2020), which was greater than this study because more than 50% participants were health workers.

5.5. Working environment

In this study working environment was defined as congenial workplace that can limit the spread of COVID-19. Sen et al., stated in their study that working environment of apparel industries was not satisfactory usually unsafe and unhygienic and the garment employees were often affected by communicable diseases. Many studies mentioned about the inadequate working environment of readymade garment factories (Sen, Antara, *et al.*, 2020). The study showed that among 305 participants nobody had Covid-19 test positive. This finding was similar with the study conducted in Iraq (Shabu, 2020).

6. Conclusion and Recommendations

6.1. Conclusions

This cross-sectional study gave emphasis on knowledge, risk perception and practices of precautionary measures towards COVID-19 among the garment workers. Most of

the respondents were well known about the type, contagiousness, symptoms, mode of transmission, and ways of prevention of COVID-19. The majority of the respondents were highly perceived of getting infection, the severity of the disease and possibility of death from COVID-19. A good number of the respondents had high level of risk perception. The majority of respondents followed the World Health Organization guidelines of protective measures such as washing hands with soap, using face mask, maintaining respiratory etiquette, maintaining physical distance, avoid touching with unclean hands and public gathering. More than three fourth of respondents had good level of practice towards COVID-19. This study revealed that there was a positive significant relationship between risk perception and the practices regarding COVID-19. This study was confined only among the few garment workers; risk perception and practices can be an area of further research for other industrial workers and public. The study has uncovered the importance of the theories developed by various scholars 'such as protection behavior theory, health belief model, value expectancy model, theory of reasoned action, Transtheoretical model. Hence the results of the study have contributed to the body of knowledge and theories on knowledge, risk perception and practices towards COVID-19.

6.2. Recommendations

The major findings for this study exposed that risk perception and the practices are positively correlated. It is attempted to give the following recommendations for this study: i) Work place manager should monitor the workers to follow the preventive measures against COVID-19 as such wearing face mask; ii) the management of the work places should invigilate the workers as regards hand washing to improve the level of practices; iii) through awareness it can be improve cough etiquette, keep away touching face, nose and eyes by unclean hands, avoid public gathering and use hand sanitizer; iv) health education program should be enhanced to disseminate information about COVID-19 that will develop knowledge, attitude, perception and practices towards COVID-19 and v) The results of the study indicate that there is a significant association between risk perception and the practices towards COVID-19. Hence, it is recommended that the risk perception should be increased by proper knowledge about the severity of COVID-19.

Declaration

This thesis entitled "Risk Perception and the Practices towards COVID-19 among the Garment Workers" is submitted to the faculty of Preventive and Social Medicine of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka and I do hereby, declare that the research work reported in this thesis has been performed by me and this work has not been submitted elsewhere for the award of any other degree.

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