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**The Use of the Health Belief Model to Determine the Differences in Employees' Beliefs and Perceptions About Hand Washing, Mask Wearing, and Social Distancing to Prevent the Spread of the COVID-19 Virus in a Higher Learning Institution in Trinidad and Tobago**

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**Abstract**

COVID-19 is a new viral disease that has caused a pandemic in the world. Due to the lack of vaccines and definitive treatment, preventive behaviours are the only way to overcome the disease. This study has been motivated by the desire to change to the prevalence of these unaccepted health behaviours and so produce improvement in community health and eventually gain an understanding of the reasons why individuals perform a variety of behaviours. The researcher used the health belief model, which explores four constructs: perceived susceptibility (five questions), perceived severity (five questions), perceived benefits (five questions), and perceived barriers (five questions). The results of the analysis have revealed no consequential relationship between the Health Belief Model constructs and health behaviour. Health education and health promotion can influence and guide the theory of health behaviour. Education programs and interventions are recommended because they are more likely to benefit employees and communities in their quest to change health behaviours.

**Keywords:** COVID 19 virus; Health Belief Model; Health behaviour; Preventive- Behaviour; employees; health education; health promotion.

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## **1. Introduction**

The outbreak of coronavirus disease (COVID-19) has been declared a Public Health Emergency of International Concern (PHEIC) and the virus has now spread in many countries and territories. While a lot is still unknown about the virus that causes COVID-19, we do know that it is transmitted through direct contact with respiratory droplets of an infected person (generated through coughing and sneezing). Individuals can also be infected from touching surfaces contaminated with the virus and touching their face (e.g., eyes, nose, and mouth). While COVID-19 continues to spread communities must take action to prevent further transmission, reduce the impacts of the outbreak, and support control measures. Reference [1] in the Handbook of Health Behaviour Research, identified that health behaviours are overt behavioural patterns, actions, and habits that relate to health maintenance, to health restoration, and health improvement. Therefore, the prevention of COVID 19 disease in a Higher Learning Institution in Trinidad and Tobago is highly dependent on the sustained effectiveness of the COVID 19 disease's preventive-protocols from the Ministry of Health in Trinidad and Tobago. It has been increasingly recognized that individuals can make contributions to their health and wellbeing through the adoption of health-enhancing behaviours such as hands washing, mask-wearing, and social distancing. Getting COVID 19 disease is associated with all the characteristics of the lifestyle diseases. That is, it is the result of a value-laden relationship of members of society with the environment. Also, it is potentially preventable and can be lowered with changes in health behaviour. The researcher believed COVID 19 disease prevention and control can be explained through health behaviour theory. The health belief model (HBM) [2], is a well-established theoretical approach that can be employed to address the problem of COVID 19 disease control. This research proposes to explore the utility of the Health Belief Model in evaluating the use of the Ministry of Health COVID 19 disease protocols for information to heighten awareness or trigger interest in performing the necessary COVID 19 disease preventive-behaviour in the employees at a Higher Learning Institution in Trinidad and Tobago.

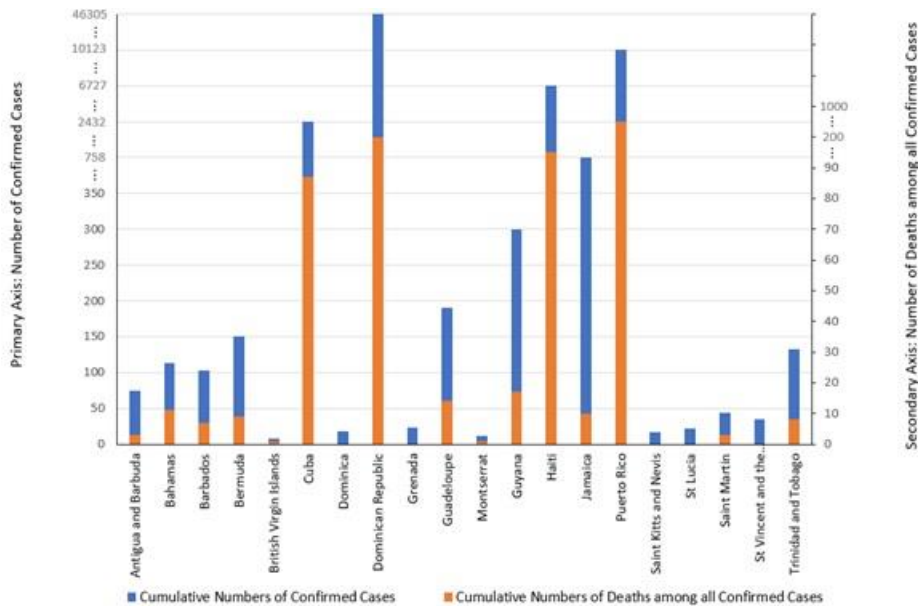
## **2. Background to the Study**

On the 11th March 2020, the Director-General of the World Health Organization (WHO) declared the outbreak of a novel coronavirus disease, COVID-19 as a pandemic. As of April 22, there are 9098 cases in 33 countries/territories (including 24 CARPHA Member States), in the Caribbean Region. The risk of further importation of cases to the rest of the Caribbean remains Very High [3]. The World Health Organization (WHO) updated on July 16<sup>th</sup>, 2020 reported active community-

transmission of the COVID 19 virus in the Caribbean. (See Table 1)

**Table 1:** Caribbean Countries COVID 19 Cumulative Confirmed Numbers of Cases and Numbers of Deaths among Confirmed Cases (WHO 16<sup>th</sup> July 2020).

Country	Net Population	Cumulative Numbers of Confirmed Cases	Cumulative Numbers of Deaths among all Confirmed Cases
Antigua and Barbuda	96,670	92	3
Bahamas	417,628	830	14
Barbados	289,032	138	7
Bermuda	64,270	157	9
The British Virgin Islands	32,852	9	1
Cuba	11,475,534	2888	88
Dominica	73,371	18	0
Dominican Republic	11,203,935	78778	1289
Grenada	109,015	24	0
Guadeloupe	480,432	290	14
Montserrat	5,238	13	1
Guyana	780,938	554	22
Haiti	11,477,631	7544	171
Jamaica	2,846,953	1003	13
Puerto Rico	3,655,755	21424	274
Saint Kitts and Nevis	57,825	17	0
St Lucia	193,064	25	0
Saint Martin	38,247	53	3
St Vincent and the Grenadines	109,577	56	0
Trinidad and Tobago	1,393,582	300	8



**Figure 1**

The researcher utilized the health belief model (HBM) to explain the factors that influence the health behaviour of individuals. The health belief model (HBM) states that, in the case of prevention, individuals will take a

health-related action if they have a desire to avoid illness and if they believe that a specific health action will prevent the illness. The model includes six elements:

- 1) Perceived susceptibility of the individual to the condition
- 2) Perceived severity of the condition as having a serious medical and social consequences
- 3) Perceived benefits of taking health action in reducing the disease threat as well as other additional benefits.
- 4) Perceived barriers to taking health action, which should not outweigh the benefits. These four perceptions are elements that determine the readiness to take the action.

They are activated by:

- Cues to action which trigger this readiness
- Self-efficacy, which is the conviction that one can successfully execute the health behaviour [2].

## The Health Belief Model

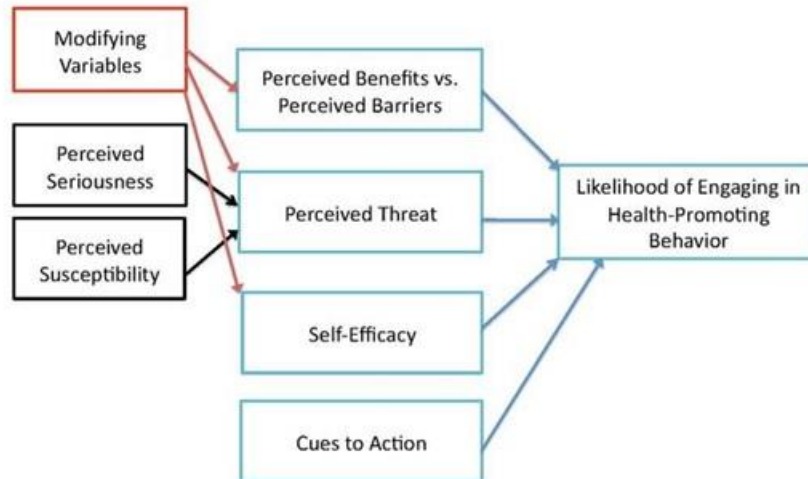


Figure 2

Source: [2] The Health Belief Model

Given the mutable nature of the COVID 19 virus, the Caribbean community is very vigilant with the observance of preventive health standards and health behaviours. These are essential to better understanding and controlling the disease. The health belief model (HBM) is a social-cognitive theoretical approach to understanding health

behaviours. According to the authors in [4, 5], social cognition addresses how people make sense of the world, the events that befall them, other people, and themselves.

### **3. Literature Review on Health Belief Model**

The health belief model (HBM) is a useful framework for investigating health behaviours and identifying key health beliefs [6, 7, 8]. The model was developed in the 1950s to explain and predict individuals' health behaviours [9]. The health belief model (HBM) is a psychological model developed by social psychologists [10], who worked for the U.S. Public Health Service [6, 11] and was first used to gain a better understanding of why free tuberculosis (TB) health screening programs were not very successful [6, 11, 12]. Particularly, the health belief model (HBM) aims to aid understanding of why individuals do not adopt disease strategies and behaviours during health campaigns and refuse to engage in preventive behaviours [6, 12, 13, 14]. The health belief model (HBM) encompasses four dimensions: perceived susceptibility, perceived severity, perceived benefits, and perceived risks. Perceived susceptibility posits that the more an individual perceives the risk of a disease, the more likely he or she will be to engage in behaviours to decrease that risk [6, 11, 12, 13]. Perceived severity includes some evaluation of the consequences of an illness based on medical information and knowledge as well as some beliefs about the negative consequences of a certain behaviour or disease that might occur for an individual [6, 13]. The third dimension, perceived benefits, suggests that individuals perceive the value and usefulness of adopting new behaviours concerning minimizing the risk of illness and will likely adopt new behaviours based on their perceptions of their benefits in reducing threats [6, 13]. The fourth dimension, perceived barriers, is the most powerful dimension of the health belief model (HBM) [6], in which individuals evaluate the obstacles and difficulties they might encounter when adopting a new behaviour. This dimension, however, might result in individuals giving up on adopting a new behaviour [6, 13]. Individuals usually evaluate the benefits and consequences of new behaviour before overcoming the old one [13].

#### ***3.1 The Management Construct/Independent Variables***

The dependent variable of the study is behaviour. Behaviour is defined as the likelihood that a person will or will not engage in a given behaviour. The respondents' actual behaviour served as the dependent variable in the Chi-squared test of association. The independent variables are mass media, Ministry of Health COVID 19 virus disease protocols (knowledge about COVID 19 virus disease), perceived susceptibility, perceived severity, perceived benefits, and perceived barriers all of which are independent variables in the health belief model (HBM). Every one of these variables is represented in the questionnaire to predict behaviour.

#### ***3.2 Methodology***

The study utilized the use of four hypotheses namely:

1. There is no significant relationship at the .05 alpha level, between the individual's perceived susceptibility and his/her health behaviour
2. There is no significant relationship at the .05 alpha level, between the individual's perceived severity and his/her health behaviour

3. There is no significant relationship at the .05 alpha level, between the individual's perceived benefits and his/her health behaviour
4. There is no significant relationship at the .05 level, between the individual's perceived barriers and his/her health behaviour.

### 3.3 Testing the Hypotheses and Presentation of Data

The purpose of the study is to find out what relationships, if any, exist between the dependent variables and the independent variables.

### 3.4 Demographic Variables Analysis

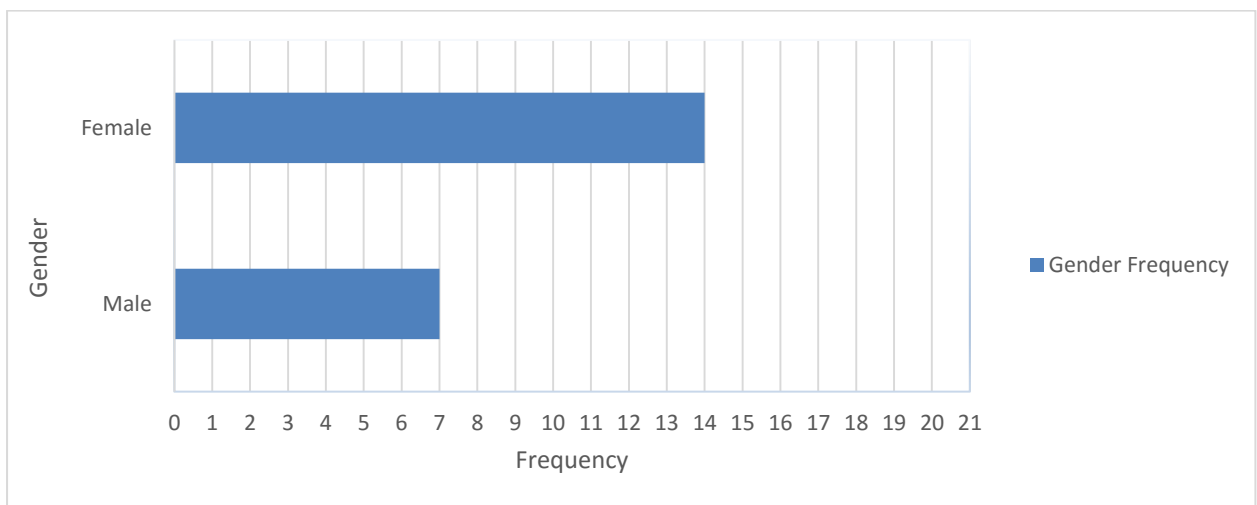


Figure 3

From Figure 3 above we can see that most of our population comprised of females as 14 (66.7%) of the responses came from females and 7 (33.3%) came from males.

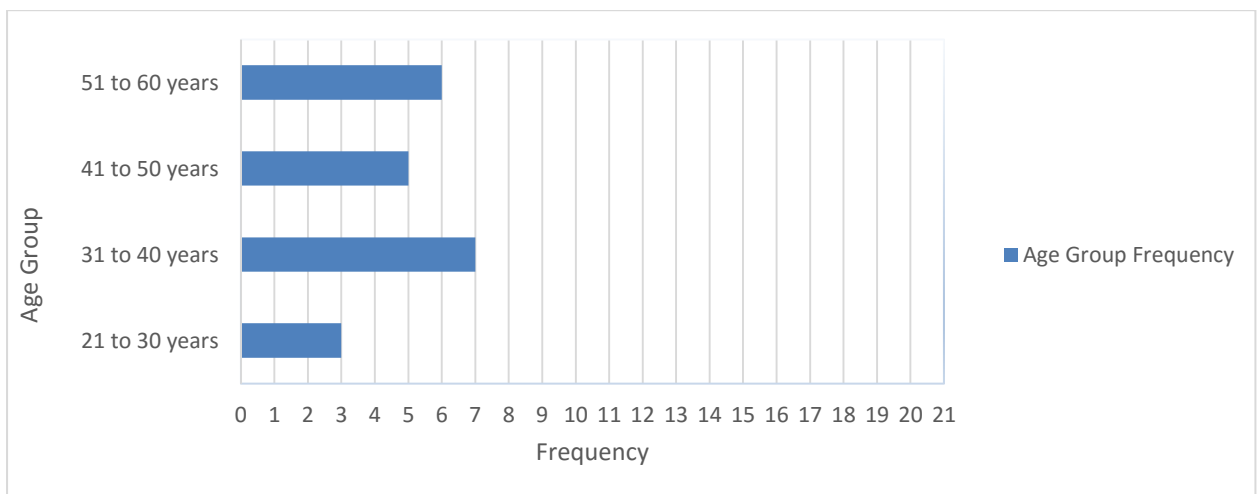


Figure 4

From Figure 4 above we can see that most of our responses came from the age group between 31 to 40 years as they accounted for 7 (33.3%) members of the population followed by the age group of 51 to 60 years at 6 (28.6%). The age group of 41 to 50 years then followed at 5 (23.8%) members of the population and then by the age group of 21 to 30 years at 3 (14.3%).

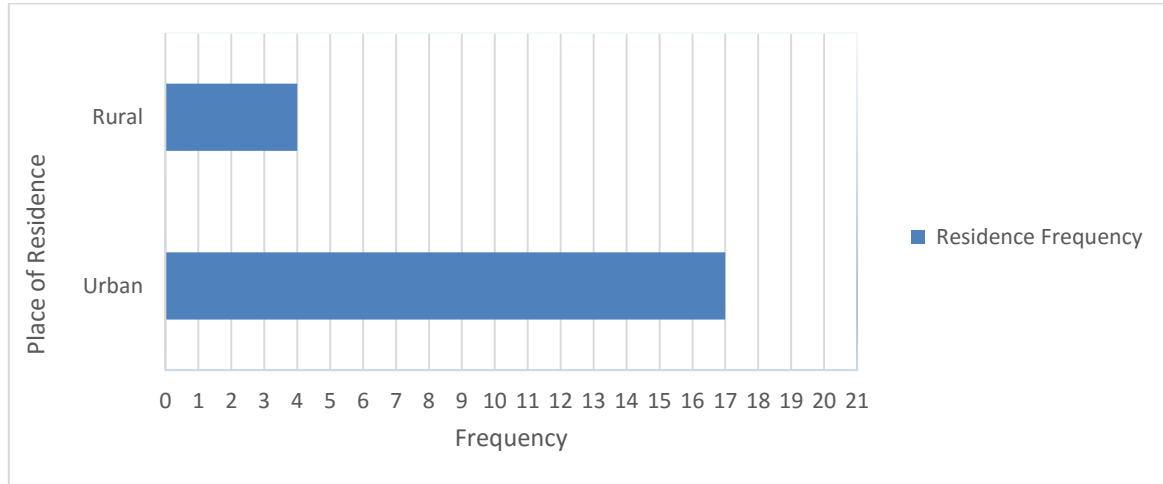


Figure 5

From Figure 5 above we can see that the most frequently occurring place of residence amongst our respondents is from Urban areas as they comprised 17 (81%) members of the population followed by Rural areas at 4 (19%).

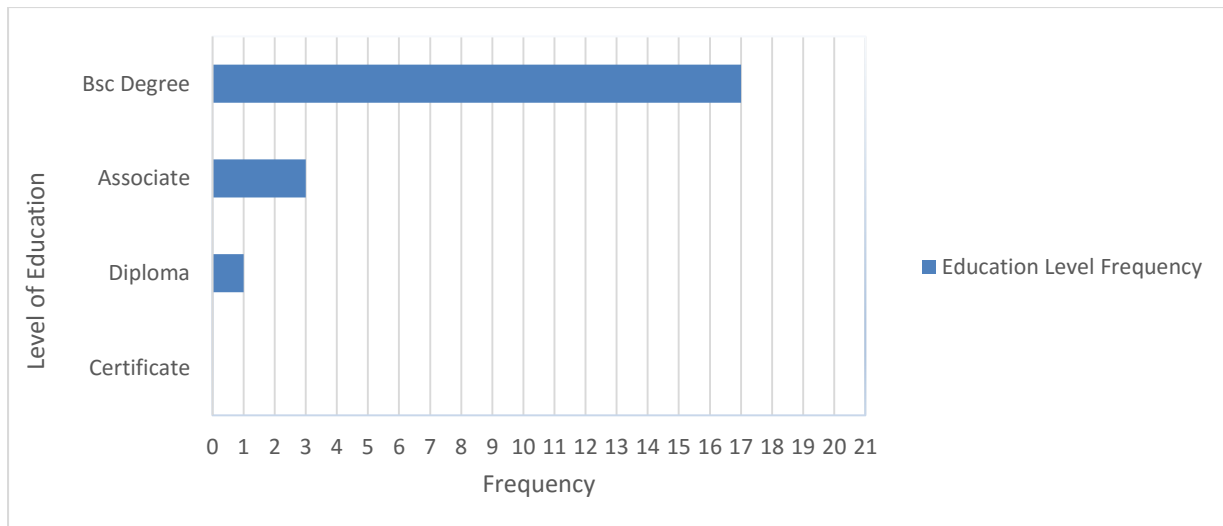


Figure 6

From Figure 6 above we can see that most of our responses came from individuals that obtained a Bsc degree as they comprised 17 (81%) members of the population followed by individuals that achieved an Associate degree with 3 (14.3%). The remainder of our population comprising of 1 (4.8%) members achieved a diploma while none of our population was at the certificate level.

### 3.5 Chi-squared Analysis

**Hypothesis 1:** There is no significant relationship at the .05 alpha level, between the individual's perceived susceptibility and his/her health behaviour.

To measure the individuals perceived susceptibility, data was collected to see if the population felt they consider themselves to be at risk of COVID-19. The variable was then tested to see if they were independent of his/her health behaviour.

**Table 2**

Individuals maintain a distance of at least 6 feet from others						
Do Individuals feel they are at risk of COVID-19	Chi-squared Test Statistic	Always	Often	Rarely	Sometimes	Grand Total
	Partially Agree	0.79	0.37	0.23	0.00	1.39
	Partially Disagree	1.79	0.43	0.05	0.24	2.50
	Strongly Agree	0.50	0.33	0.33	0.07	1.23
	Grand Total	3.08	1.13	0.62	0.31	<b>5.13</b>

**Critical Value = 12.59 and p-value = 0.57 for hypothesis 1**

**Hypothesis 2:** There is no significant relationship at the .05 alpha level, between the individual's perceived severity and his/her health behaviour.

To measure the individuals' perceived severity, data was collected to see if the population felt the disease has a high mortality rate. The variable was then tested to see if they were independent of his/her health behaviour.

**Table 3**

Individuals maintain a distance of at least 6 feet from others						
Do individuals think the disease has a high mortality rate	Chi-squared Test Statistic	Always	Often	Rarely	Sometimes	Grand Total
	Partially Agree	2.00	1.33	0.33	0.07	3.73
	Partially Disagree	0.02	0.05	0.19	0.00	0.26
	Strongly Agree	2.29	2.12	0.76	0.01	5.18
	Strongly Disagree	0.29	0.76	0.05	0.24	1.33
	Grand Total	4.60	4.26	1.33	0.32	<b>10.51</b>

**Critical Value = 16.92 and p-value = 0.31 for hypothesis 2**



**Hypothesis 3:** There is no significant relationship at the .05 alpha level, between the individual's perceived benefits and his/her health behaviour.

To measure the individuals' perceived benefits, data was collected to see if the population felt the disease can be easily prevented by personal protective equipment such as masks, and disposable gloves. The variable was then tested to see if they were independent of his/her health behaviour.

**Table 4**

Do Individuals think the disease can be easily prevented by personal protective equipment such as masks, and disposable gloves	Individuals maintain a distance of at least 6 feet from others					
	<b>Chi-squared Test Statistic</b>	Always	Often	Rarely	Sometimes	Grand Total
	No Idea	0.29	0.43	0.05	2.44	3.20
	Partially Agree	0.50	0.00	1.33	0.07	1.90
	Partially Disagree	0.05	0.13	0.29	0.23	0.69
	Strongly Agree	0.50	0.33	0.33	1.67	2.83
	Grand Total	1.33	0.89	2.00	4.40	<b>8.62</b>

**Critical Value = 16.92 and p-value = 0.47 for hypothesis 3**

**Hypothesis 4:** There is no significant relationship at the .05 level, between the individual's perceived barriers and his/her health behaviour.

To measure the individuals perceived barriers, data was collected to see if the population feels it is difficult to follow the instructions to prevent the disease. The variable was then tested to see if they were independent of his/her health behaviour.

**Table 5**

Do Individuals think it is difficult to follow the instructions to prevent the disease?	Individuals maintain a distance of at least 6 feet from others					
	<b>Chi-squared Test Statistic</b>	Always	Often	Rarely	Sometimes	Grand Total
	Partially Agree	1.14	0.30	3.44	1.15	6.03
	Partially Disagree	0.13	0.01	0.24	0.55	0.93
	Strongly Agree	0.29	0.43	0.05	2.44	3.20
	Strongly Disagree	1.10	0.35	0.52	2.62	4.59
	Grand Total	2.65	1.09	4.25	6.76	<b>14.75</b>

#### **Critical Value = 16.92 and p-value = 0.10 for hypothesis 4**

#### **4. Discussion**

The study used a small purposeful homogeneous sample of twenty-one (21) employees of a Higher Learning institution and presented the use and applications of descriptive statistics in the forms of frequencies, proportions, means, standard deviations, and Chi-square test of association. The gender relative frequency distribution has shown that 66.7% of the females' employee population and 33.3% of male employees responded by completing the questionnaire. The researcher has identified that there are more females employed at the institution. It can, therefore, be assumed that female employees are more likely to adhere to the COVID 19 disease Ministry of Health preventive mass media messages. The age relative frequency distribution has shown that employees in the 31-40 years group accounted for 33.3% of the population followed by 51-60 years group accounted for 28.6% of the population than the 41-50 years group accounted for 23.8% of the population and finally, the 21-30 years group accounted for 14.3% of the population. The inequality in the age distribution has shown that young employees are not very much concerned about the importance of adhering to the Ministry of Health media health preventive messages. The level of education frequency distribution has shown that 81% of employees are holders of a bachelor's degree while 14.3% of employees are holders of Associate degrees and 4.8% represented one employee with a Diploma. There was no one in the sample with a certificate. It can be assumed that employees' level of education can contribute to the adhering to the Ministry of Health COVID 19 disease health preventive mass media messages. The analysis of the place of residence has shown that 81% of employees preferred living in urban communities while 19% preferred living in rural communities. The Chi-squared test of the hypotheses has not identified any consequential relationship between the two phenomena, the associations between beliefs and perceptions about COVID 19 disease, and the beliefs and perceptions of preventive practices of COVID 19 disease. The researcher found that holistically, the Health Belief Model can facilitate and improve knowledge about the COVID 19 disease prevention and control and can raise awareness about the threat of the disease. According to the author in [15], as awareness rises and insight develops, so too, is, the demand for new knowledge, new skills, and new understandings will often grow, and as knowledge, skills, and understanding grow, so the picture of the possible range of actions and goals will change. Hypothesis 1 has shown that the Chi-squared test statistic of 5.13 is lower than the critical value of 12.59 and the p-value of 0.57 is greater than 0.05 (alpha level) and hence we fail to reject the hypothesis. One should, therefore, conclude that there is no relationship between perceived susceptibility (risk of COVID 19) and social distancing (maintaining the six feet from others). Hypothesis 2 has shown that the Chi-squared test statistic of 10.51 is lower than the critical value of 16.92 and the p-value of 0.31 is greater than 0.05 (alpha level) and hence we fail to reject the hypothesis. One should, therefore, conclude that there is no relationship between perceived severity (the disease has a high mortality rate) and social distancing (maintaining six feet from others). Hypothesis 3 has shown that the Chi-squared test statistic of 8.62 is lower than the critical value of 16.92 and the p-value of 0.47 is greater than 0.05 (alpha level) and hence we fail to reject the hypothesis. One should, therefore, conclude that there is no relationship between perceived benefits (use of personal protective equipment) and social distancing (maintaining six feet from others). Hypothesis 4 has shown that the Chi-squared test statistic of 14.75 is lower than the critical value of 16.92 and the p-value of 0.10 is greater than 0.05 (alpha level) and hence we fail to reject the hypothesis. One should, therefore, conclude that there is no relationship between perceived barriers

(difficult to follow the instructions of the Ministry of Health COVID 19 disease protocols) and social distancing (maintaining six feet from others).

## **5. Recommendations and Conclusions**

The findings of the study proved that there is a need for all employees to change their health behavior because the COVID 19 virus is no respecter of anyone. According to the WHO statistical analysis, the disease is associated with high morbidity and mortality rates. The researcher, therefore, recommended intervention programs that focused on health behavior change. The author in [16] elucidated that health behavior refers to the actions of individuals, groups, and organizations as well as their determinants, correlates, and consequences, including social change, policy development, and implementation, improved coping skills, and enhanced quality of life. Health behavior-change goes hand in hand with health education and health promotion, therefore, according to the author in [17] health education aimed at bringing about behavioral changes in individuals, groups, and the larger populations from behaviors that are presumed to be detrimental to health, to behaviors that are conducive to present and future health. Employees and communities have the ardent task of making abundantly clear that it is everyone's responsibility to adhere to the mandate of the health education and health promotion policies. Finally, according to the author in [18], there are three categories of health behavior that are important for an individual to maintain good health.

1. Preventive health behavior is any activity undertaken by an individual who believes him/her/ self to be healthy, to prevent or detect illness in an asymptomatic state.
2. Illness behavior is any activity undertaken by an individual who perceives him/her/ self to be ill, to define the state of health, and to discover a suitable remedy.
3. Sick-role behavior is any activity undertaken by an individual who considers himself/herself to be ill to get well. It includes receiving medical treatment from physicians, generally involves a whole range of dependent behaviors, and leads to some degree of exemption from one's usual responsibilities [18].

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