# Effect of Health Belief Model among Benha Telecom Egypt Employees at High Risk for Obesity

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## Abstract

**Background:** Obesity has become a significant public health issue and ranking sixth among causes of death worldwide, working adults have been identified as a high-risk group more exposed to the predictors of overweight and obesity than the general population. This study **aimed** to evaluate the effect of health belief model among Benha Telecom Egypt employees at high risk for obesity. **Research design:** A quasi-experimental design was utilized. **Settings**: This study was conducted at Benha Telecom Egypt. **Sample:** Convenience sample of 80 employees was included. Three **tools** were uses 1) A self-administered questionnaire to collect data about socio-demographic characteristics, knowledge, nutritional habits, healthy food and regular exercises, and the effects of obesity on employee lifestyle 2) The health belief model (HBM) sub-constructs 3) Anthropometric measurement. **Results**: Around fifth of employees were obese class1 (low risk) while more than one third was obese class II (moderate risk) and about two fifths were obese class III (high risk of obesity). There was a highly significant difference between employees' knowledge and their practices regarding obesity, healthy food, and exercises pre & post application of HBM. **Conclusion**: The implementation of health belief model significantly improved the employee's knowledge, nutritional habits and practices regarding obesity. There were positive high statistically significant correlations between employees ' total practices and health belief model. **Recommendations**: Routine screening for obesity, dieting, and other weight reduction methods should be a component of the continuing medical care provided by all health services. According to HBM, it's important to taken into consideration the advantages and disadvantages of changing health behavior because people are more inclined to take action when they perceive advantages than disadvantages.

**Keywords:** Health Belief Model, High Risk for Obesity, Telecom Employees.

## Introduction

Currently, chronic non-communicable illnesses have a significant effect on the morbidity and mortality rates of populations. This is due to demographic and epidemiological shifts, higher life expectancies, and the prevalence of unhealthy behaviors. Obesity, which is both a risk factor and a chronic disease, is a significant public health concern. Obesity is a complex multifactorial disorder characterized by an excessive or abnormal buildup of fat which contemplate a risk to health and identified as a major public health issue and a prominent primary cause of disability and mortality **(World Health Organization, 2021).** According to the high rates observed globally, obesity affects the majority of people. The term "obesity" refers to the widespread issue of excessive body fat. Body Mass Index (BMI) ranges from 25 to 29.9 kg/m2 for

overweight people and 30 kg/m2 or above for obese people **(Odysseos & Avraamidou, 2020).**

The highest rates of obesity were observed in the continents of America and Europe in the year 2019. In the Americas, the percentage of obesity increased from 6.8% in 1980 to 22.4% in 2019, while in Europe, it increased from 8.4% in 1980 to 20% in 2019. The Eastern Mediterranean region saw a rise in obesity prevalence from 6.4% to 17.4%, and in the African region, it increased from 3.8% to 10.9%. Some African countries experienced significant fluctuations in obesity rates. For example, South Africa's rate increased from 11.8% in 1980 to 23.3% in 2019, while Iran's rate increased from 5.9% in 1980 to 20.1% in 2019 **(Polyzos & Mantzoros, 2019).**

In the last few decades, there has been a global increase in obesity, with the average adult BMI rising from 22 kilograms per square meter in 1975 to 24 kilograms per square meter in 2014. The prevalence of obesity has increased in both males and females, with male obesity rates rising from 3.2 percent to 10.8 percent. Among females, the rates have also increased. A study found that a 2% increase in the average BMI of a population led to a one-year reduction in life expectancy **(Semlitsch et al., 2019).**

The primary method for determining if someone is overweight or obese, whether they are a child, adolescent, or adult, is by calculating their BMI. BMI is a measurement of height adjusted weight calculated in kilograms divided by the square meter (kg/m2) of measured weight (in kilograms) and height (in meters). The internationally accepted standard measurement for adults is body mass index (BMI) **(Thongworn & Sirisuk, 2018).**

The treatment of obesity is challenging due to its complex nature, which involves a combination of genetic, environmental, and societal factors. Genetics can significantly influence energy imbalance, while environmental factors have contributed to the increase in the consumption of low-cost, high-energy processed foods. Societal and cultural habits also play a role in unhealthy dietary intake and physical inactivity, which contribute to the development of overweight and obesity **(Dobbs et al., 2018).**

The primary reasons for the obesity epidemic are believed to be sedentary lifestyles, a decrease in physical activity, and the consumption of unhealthy diets, such as those that are high in sugar and refined carbohydrates that has spread throughout much of the world in recent decades. These factors are in addition to the plethora of genetic, endocrine, metabolic, and environmental factors **(Upadhyay et al., 2018).**

Being overweight or obese is a significant risk factor for chronic conditions like diabetes, heart disease, musculoskeletal issues, and several types of cancer. These detrimental effects as well as the increase in obesity rates place a heavy burden on society. There are social costs associated with obesity, including both direct costs like medical expenses and indirect costs like lost productivity. Also, the majority of these indirect costs are connected to one's employment. Workplace accidents are more likely to happen to obese employees, who are also less productive and have greater absenteeism rates **(Robertson et al., 2020; Yuan et al., 2021).**

In 1950, a group of public health professionals in the United States created the Health Belief Model (HBM) to encourage people to adopt healthier lifestyles. The HBM is a psychological model that focuses on

changing health behaviors. The model posits that people who are aware of the real health risks they face are more likely to take preventative action if the cost is lower than the benefit. By incorporating the Health Belief Model into individual health education sessions, practitioners can gain a better understanding of their clients' health behaviors and anticipate potential obstacles. The HBM combines targeted interventions with health education to encourage people to adopt healthier lifestyles. Demographic factors and prior social experiences can also influence people's beliefs, according to the HBM **(Baktash & Naji, 2019).**

The Health Belief Model is a framework used to understand and expect health-related behaviors. The health belief model proposes that variations in health behaviors can be expected based on perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action, and self-efficacy. Perceived susceptibility refers to one's belief about the likelihood of developing a disease or condition. Perceived severity is a belief about the seriousness of the condition. The perceived threat combines susceptibility and severity. Perceived benefit is a confidence that adoptig a certain behviors will reduce the risk of the condition, while perceived barriers refer to one's belief about the potential costs of implementing that behaviors. Cue to action serves as a motivation for eagerness to do the behavior, and self-efficacy refers to one's self-confidence in their capability to successfully take the action or implement the required behaviors **(Semlitsch et al., 2019).**

Recent research has demonstrated that HBM can effectively address health issues due to the fundamental elements of perception and motivation. People must believe that administering HBM may lower their risk of contracting the disease or lessen its severity if they are to believe that there is a possibility that the condition will significantly impact their lifestyle **(Khumros et al., 2019).**

The community health nurse must address obesity as a chronic illness that compromises patients' physical and mental health as well as a disease that can be avoided by promoting health throughout the lifespan. The community health nurse must can counsel those at risk for overweight or obese. Nutritional recommendations emphasize the importance of daily intake and quitting smoking. The nurse must teach patients how to eat healthily, exercise frequently, and wake up without endangering their wellbeing **(Gillis, 2016)**.The prevention of obesity is one of the main duties of nurses, who also educate individual and the community through awareness campaigns that promote healthy eating, behavioral change, physical exercise, and weight-reduction medications **(Vandali, 2017).**

**Significant of the Study**

The physiological and morphological pressures applied to the body result in an increase in all-cause mortality. Throughout the past 20 years, the health problems associated with overweight and obesity have received more attention. Among other things, the general population is informed that being overweight or obese has a negative impact on one's health. Many studies have demonstrated that a number of undesirable effects are associated with being overweight. Although death is inevitable for man, adopting healthy behaviors can lengthen life and improve quality of life **(Younis, 2021).**

Obesity is responsible for roughly 4.7 million premature deaths yearly. It accounted for 8.4% of all fatalities worldwide in 2017, ranking as the fifth most preventable cause of death. In terms of obesity prevalence, Egypt ranks 18th in the world. 39.8% of adult Egyptians with a BMI over 30 kg/m2 were

obese, according to the "100 million health" survey, which was carried out in Egypt in 2019 and examined 49.7 million adult Egyptians (over 18 years old). Adult females were more likely to be obese than adult males were (49.5% of Egyptian adult females were obese versus 29.5% of males). Egypt is one of the top countries in the world for the incidence of obesity. Obesity is a primary cause of premature death worldwide. Because obesity serves as a proxy for numerous comorbidities, which in turn cause morbidity and mortality, the impact of obesity may be overseen **(Aboulghat et al., 2021).**

Most overweight and obese persons have poor eating habits and engage in minimal moderate physical activity. Telecom workers fall into this category because most of their employment is office-based, do not require great effort, and leaves little time for exercise due to the nature of their schedules. One-on-one health coaching sessions that incorporate the HBM can help practitioners better understand and predict the health behaviors of their clients. The HBM is a set of targeted treatments and health education meant to encourage people to adopt healthy lifestyles**.**

**Aim of the Study:**

This study aimed to evaluate the effect of health belief model among Benha Telecom Egypt employees at high risk for obesity through:

1. Assessing employees ' knowledge regarding obesity (pre and post health belief model application).
2. Assessing employees ' practices regarding obesity (pre and post health belief model application).
3. Developing and implementing the program about obesity
4. Evaluating the effect of the HBM on employees' knowledge and practices improvement.

**Research Hypothesis**:

Telecom employees' knowledge and practices regarding obesity would improve after health belief model implementation.

**Subjects and Method:**

**Research Design:** The study employ the quasi-experimental (pre/post-test) design.

**Setting**

This study was conducted at Benha Telecom Egypt.

**Subjects**

A convenience sample of 80 employees from the previously mentioned setting.

**Tools of Data Collection:**

The study utilizes three tools for data collecting :

**First Tool**

A Structured interview questionnaire. The researchers designed this questionnaire based on reviewing relevant literatures; it involved five main parts to assess the followings:

**Part 1:** Socio-demographic characteristics of employees: to assess age, sex, marital status, place of residence, monthly income, educational level, and nature of work.

**Part 2:** Was concerned with the studied employees' knowledge regarding obesity pre/post application of HBM, which included six items including meaning of obesity, causes, factors during the work, complications of obesity, weight reduction methods, and weight reducing exercises.

A Scoring system for employees' knowledge was prepared as; each correct answer was scored one and each incorrect answer was scored zero. The categories of the total score was as follows: satisfactory knowledge was ≥50%, and unsatisfactory knowledge score <50%.

**Part 3:** Was concerned with the studied employees' nutritional habits and its

consequences pre/post application of HBM, which included ten items as: Numbers of meals, most healthy way of cooking, component of healthy diet, the main food groups, calories of food, food contains high carbohydrate, fiber, food types that contain calcium and fat control advice.

A Scoring system for employee's nutritional habits and its consequences was prepared as; each correct answer was scored one and each incorrect answer was scored zero. The total score of nutritional habits was classified as follows: satisfactory level was ≥50% and unsatisfactory score was less than 50%.

**Part 4:** Was concerned with the studied employees' practices pre/post application of HBM about healthy food and regular exercises:

**A. Healthy food;** There are 16 components, each of which can be given a score of 2 for always, 1 for sometimes, and 0 for rarely. The highest possible score is 33 for the entire assessment.

**B. Regular exercises;** which included 13 items, each item has been scored as 2 score for always, 1 score for sometimes and 0 score for rarely, and the total optimal score = 26. The total employee's practices score was categorized into three levels as follows: always >75%, sometimes 50% and more, while rarely <50%.

**Part 5:** Was concerned with the obesity effects on the studied employees' life style before and after application of HBM. There are 20 items (9 items for physical health, 5 items for self -esteem and 6 items social distress). **Scoring system:** Each element was rated as 1 point for always, 2 points for sometimes, and 3 points for rarely. The total score for the assessment was 20 points, and scores of 50% or greater were deemed positive, whereas scores below 50% were deemed negative.

**Second tool:** Was concerned with the sub-constructs of HBM, It was composed of 7 variables which include 70 items; 9 items for perceived threat scale about susceptibility and severity of obesity, 10 items for perceived benefits scale, 12 items for perceived barriers scale, 6 items for cues to action scale, The Perceived Self-Efficacy in Dietary Life Scale consists of 16 items, while the Perceived Self-Efficacy in Exercise Scale is made up of 12 items. Additionally, the Behavioral Intention of Weight Reduction Scale consists of 5 items.

In the Health Belief Model, a 4-point Likert scale was used to measure possible responses for each variable, ranging from "Strongly Disagree" to "Strongly Agree," with scores of 1 to 4 assigned to each response, where higher scores indicated a greater degree of agreement. However, for the Behavioral Intention of Weight Reduction Scale, a five-point Likert scale was utilized, which included the response option of "Don't Know," in addition to "Strongly Disagree," "Disagree," "Agree," and "Strongly Agree." Scores of one to five were assigned to each answer, with higher scores indicating a greater intention.

**Third tool:** Was concerned with Anthropometric measurement is a technique used to determine the likelihood of obesity and body mass index by measuring three key variables: weight, height, and BMI. To obtain weight measurements, the researchers used appropriate international standard scales that were calibrated with a 0.5kg weight to ensure accuracy. Weight was taken without shoes and with light clothing. Height measurements were taken by assuming a standing position with bare feet or wearing thin socks, and without any headwear, while using a height scale to record the individual height to the closest 0.5 cm.

BMI, which indicates the level of body fat, was computed using the equation: BMI = Weight in kilograms / Height² in meters. Employees were categorized according to their BMI to determine the degree of obesity risk. Those with a BMI greater than 40 kg/m$^2$ were classified as obese class III, which is high-risk. Those with a BMI ranging from 35-39.9 kg/m$^2$ were classified as obese class II, which is moderate-risk. Those with a BMI ranging from 30-34.9 kg/m$^2$ were classified as obese class I, which is low-risk. Lastly, those with a BMI ranging from 25-29.9 kg/m$^2$ were classified as overweight but not obese.

**Content validity and reliability:**

According to the Cronbach's Alpha coefficient test, which measured the reliability, revealed that each of the tools contained relatively homogenous items as indicated by the high reliability. The perceived threat scale was 0.85, the perceived benefits scale was 0.90, the perceived barriers scale was 0.76, the cues to action scale was 0.75, the perceived self-efficacy in dietary life scale was 0.80, and the perceived self-efficacy in exercise scale was 0.84. The validation was completed by five experts from the community health nursing specialties from the Benha University Faculty of Nursing, who assessed the tools for comprehensiveness, appropriateness, and applicability.

**Ethical Considerations**:

Before the interview and after explaining the purpose and the significance of the study to each employee, verbal agreement was sought. By coding the data, anonymity and confidentiality were guaranteed. The personnel were made aware of their freedom to renounce participation in the study at any time and without providing a justification.

**Pilot Study:**

A pilot study involving 10% (8) of the studied employees was conducted to assess the clarity, application, and time required to complete the study instruments, as well as to identify any challenges or issues that might impede the data collection process. No alterations were made. The main study comprised the participants from the pilot study.

**Field Work**

The Dean of the Faculty of Nursing at Benha University provided a written official consent, which was then forwarded to the relevant Benha Telecom Egypt officials in order to get their permission to carry out the study after explaining its aim. After introducing themselves and outlining the study's objectives, the researchers conducted interviews with the employees. To receive the educational session, the employees were separated into 4 groups, each with roughly 20 employees. Four steps made up the study's execution: assessment, planning, implementation, and evaluation. These phases were completed during a five-month period, from the beginning of October 2021 to the end of March 2022. The researchers visited the previously mentioned settings two days/week (Saturday and Sunday) from 9.00 a.m. to 3 p.m.

**Assessment phase:**

After obtaining formal approvals to carry out the study. This phase included interviewing the employees to gather baseline data. The researchers greeted each employee at the beginning of interview and discussed the goal, scope, and methods of the study. A pre-test was conducted to evaluate the knowledge and practices of the employees regarding obesity. The information gathered during this phase served as the baseline for subsequent comparisons to assess the impact

of the implementation of the HBM. The filling of tools took, on average, between 30 and 60 minutes. Employees were examined in groups of two to four per week throughout this part of the assessment, which lasted the first month.

**Planning Phase:**

The program was created by the researchers as a printed Arabic booklet to fulfill the needs of the employees that were identified during the assessment phase. The development of the program took into account pertinent literature and was created to tackle the insufficient understanding of employees about obesity. This includes its definition, causes, and effects, as well as weight loss techniques, risk factors, dietary therapies (such as diets high in fiber, low in fat, and rich in vegetables and fruits), and beliefs regarding weight reduction and the significance of BMI measurements. In addition, the program covers habits related to obesity such as consuming nutritious foods, comprehending the components of a balanced diet, adhering to healthy diet guidelines, and engaging in regular physical activity like a 30-minute walk every day.

**Implementation Phase:**

The educational program was implemented over a 6-month period beginning in October 2021 and ending in March 2022. The researchers spent two days a week (9 a.m. to 3 p.m.) at Benha Telecom Egypt. Data was gathered before and after the program's implementation, and a total of 80 employees were involved (80). They were split up into four groups, each with twenty employees. Every week, the researchers questioned 2-4 groups. The developed program was delivered to the employees over the period of seven sessions (4 theoretical and 3 practical). Each session lasted between 30 and 60 minutes and included discussion time based on the participants' accomplishments, progress, and feedback. The initial session commenced with an overview of the educational program and its aims. At the beginning of every subsequent session, a review of the preceding one was given. To impart knowledge, various teaching methods were employed, such as discussions, demonstrations, re-demonstrations, poster displays, and group discussion. In addition, PowerPoint presentations, informative brochures, and other suitable teaching aids were utilized.

**Evaluation phase**:

After the program was completed, the employees were assessed to determine the impact of the program on their knowledge and practices related to obesity. The evaluation also aimed to measure the health belief model effectiveness of enhancing employees' health status and healthy practices. The evaluation was carried out using the same tools for both the pretest and posttest.

**Statistical Analysis**

The Statistical Package for Social Sciences (SPSS), version 21, was used to organize, tabulate, and statistically analyze the obtained data. Descriptive statistics were used to present the data as frequencies, percentages, means, and standard deviation. To calculate the statistically significant differences, the Chi square tests, T paired test and Pearson correlation coefficient were utilized. A P-value of less than 0.05 was considered significant, while one of less than or equal to 0.001 was regarded highly significant.

**Results:**

**Table 1** represents socio-demographic characteristics of the employees. It was clear that 65% of employees aged from 30 to 40 years old, 60% were male, 66.25% of them were married and 71.25% were lived in urban settings. Furthermore 72.50% of

employees had a higher education, 45% had sufficient income and 77.50% were employees (office work jobs).

Based on BMI and the associated risk levels for obesity, Figure 1 illustrates that among the employees, 12.5% were classified as obese class 1 with low risk for obesity, 38% were obese class II with moderate risk, and 41% were obese class III with high risk. In addition, only 8.75% of the employees were considered overweight.

**Table 2** represents that, 50% of employees had a correct knowledge for obesity meaning before application of HBM which increased to 87.5% after application. Also, pre-application of HBM 37.50% of them had correct knowledge about causes of obesity that increased to 93.75% post application. Moreover, 40% and 43.75% of the studied employees had a correct knowledge about complication of obesity and methods of weight reduction pre-application of HBM which increased post application to 75%and 85% respectively with a highly statistical significance difference between pre /post model application at P value <0.001.

**Figure 2** illustrates pre -application of HBM 36.6% of studied employees had correct knowledge related to nutritional habits which increased to78.3% post application with highly statistically significant differences at P value <0.001.

**Figure 3** clarifies the total employees' practices regarding healthy food. It was clear that pre -application of HBM 18.75%, 25% of the studied employees had always and sometimes taking healthy food which increased post application to 50%and 41.25% respectively with highly statistical significance difference before and after model application at P value <0.001.

**Figure 4** describes that, pre -application of HBM 8.75%, 20% of the studied employees had always & sometimes practice of regular exercises while improved to 81% & 13.75% post application respectively. A highly statistically significant difference was revealed between employees' practices of exercises before and after -HBM application at P<0.001.

**Figure 5** demonstrates the total effect of obesity on employees' physical health. The figure illustrates that 72.5% of employees had always effect of obesity on their physical health before application of HBM while reduced to 18.75% after HBM application with highly statistical significance difference pre /post application of HBM at P value <0.001.

**Table 3** exhibits the overall impact of obesity on the self-esteem of the employees. Prior to the application of HBM, it was observed that 75% and 10.8% of the participants had reported an always and sometimes effect of obesity on their self-esteem, respectively. However, after the implementation of HBM, only 78.6% of employees reported a rare effect on their self-esteem. The difference between the pre and post-application of HBM was found to be highly statistically significant with a p-value of less than 0.001.

On the other hand, **Figure 6** presents the collective influence of obesity on the social health of the employees. Prior to the application of HBM, it was observed that 60% of employees reported a constant social effect of obesity. However, after the application of HBM, only 12.5% of employees reported a rare social effect of obesity. The difference between the pre and post-application of HBM was also found to be highly statistically significant with a p-value of less than 0.001.

**Table 4** displays the outcomes of a series of regression analyses that examined the relationship between various factors (perceived threat, perceived benefits,

perceived barriers, cues to action, and perceived self-efficacy in dietary life and exercise) and the employees' intention to lose weight. Although the model only accounted for a portion of the variance (R2 = 0.149), it was highly significant. The study discovered that perceived threats, cues to action, and perceived self-efficacy were significantly linked to weight loss behavior intention, while perceived benefits and perceived barriers were not. Among these three variables, the cue to action was the most crucial.

**Table 5** demonstrates a significant improvement in the employees' overall knowledge about obesity, nutritional habits, and their practices following the implementation of HBM, with statistically significant differences at $p < 0.001$.

**Table 6** indicates a positive correlation between the employees' practices and the chosen health belief model, with statistically significant differences at $p < 0.001$.

**Table1. Distribution of studied employees according to their socio demographic characteristics (n=80).**

| Items | NO. | % |
|---|---|---|
| **Age/ years** | | |
| 20-<30 years | 15 | 18.75 |
| 30- 40 years | 52 | 65.00 |
| Above 40 years | 13 | 16.25 |
| **Sex** | | |
| Male | 48 | 60.00 |
| Female | 32 | 40.00 |
| **Marital Status** | | |
| Single | 27 | 33.75 |
| Married | 53 | 66.25 |
| **Place of residence** | | |
| Urban | 57 | 71.25 |
| Rural | 23 | 28.75 |
| **Monthly Income** | | |
| Sufficient | 36 | 45.00 |
| Sufficient & save | 24 | 30.00 |
| Not sufficient | 20 | 25.00 |
| **Educational level** | | |
| Secondary education | 16 | 20.00 |
| High education | 58 | 72.50 |
| Postgraduate | 6 | 7.50 |
| **Nature of job** | | |
| Head Manager | 18 | 22.50 |
| Employee (office work jobs) | 62 | 77.50 |

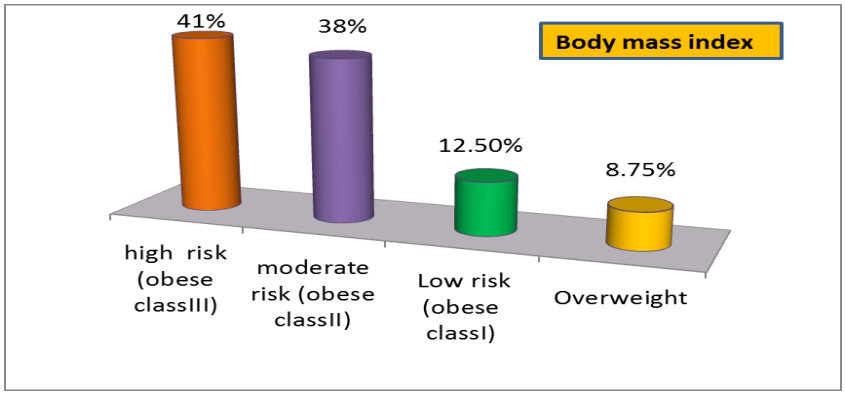


**Figure (1): Percentage distribution of the studied employees' body mass index and the levels for obesity risk (no=80).**

**Table2. Distribution of studied employees' correct knowledge related of obesity pre/post HBM application (n=80).**

| Obesity knowledge | Pre Program Correct | | Post Program Correct | | X2 | P Value |
|---|---|---|---|---|---|---|
| | No | % | No | % | | |
| Meaning | 40 | 50.00 | 70 | 87.50 | 13.153 | <0.001* |
| Causes | 30 | 37.50 | 75 | 93.75 | 41.544 | <0.001* |
| Causes during work | 27 | 33.75 | 72 | 90.00 | 60.404 | <0.001* |
| Complication | 32 | 40.00 | 60 | 75.00 | 40.242 | <0.001* |
| Method of weight reduction | 35 | 43.75 | 68 | 85.00 | 103.00 | <0.001* |
| Types of exercises which help in weight reduction | 34 | 42.50 | 65 | 81.25 | 12.739 | <0.001* |
| Total knowledge | 40 | 50.00 | 73 | 91.25 | 62.079 | <0.001* |

***P value :< 0.001 Significance: HS.**

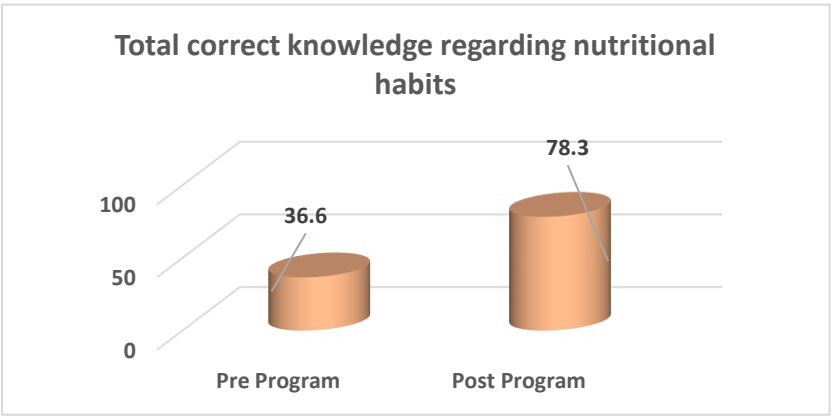


**Figure (2): Percentage distribution of total correct knowledge of studied employees in respect to their nutritional habits pre/post health belief model application (no=80).**

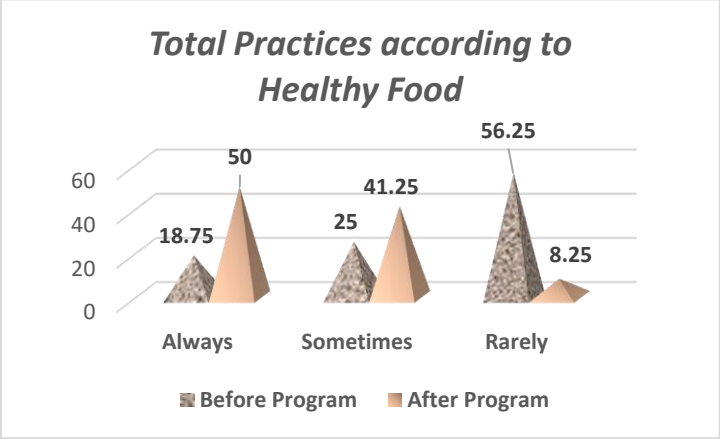


**Figure (3): Percentage distribution of total correct practices of studied employees related to healthy food pre/post health belief model application (no=80).**

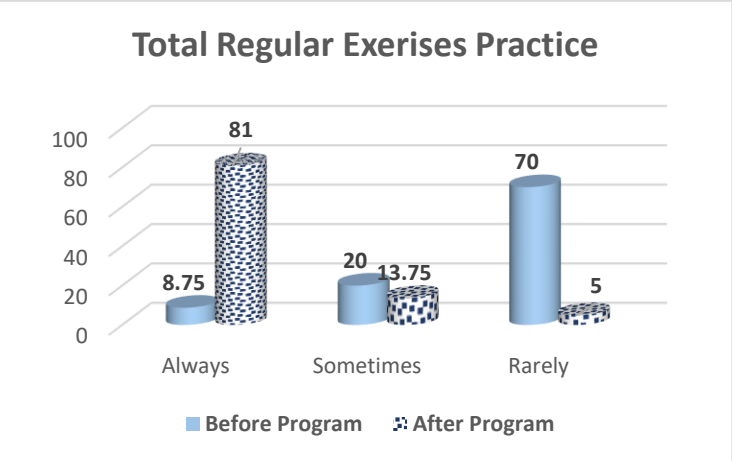


**Figure (4): Percentage distribution of total correct practices of studied employees regarding their regular exercises pre/post health belief model application (no=80).**

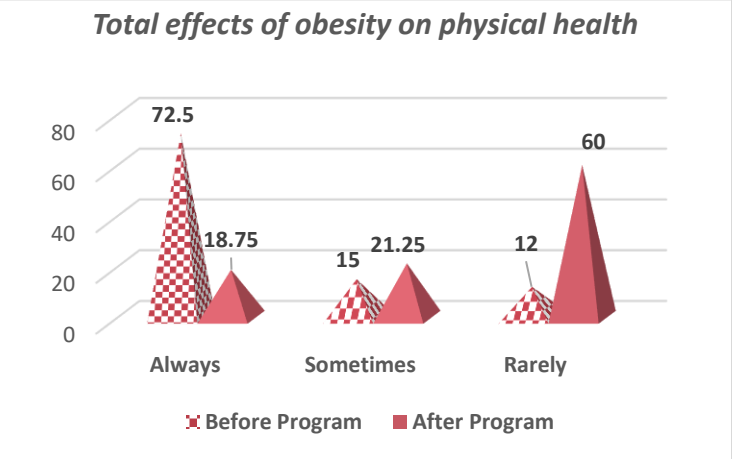


**Figure (5): Percentage distribution of total effects of obesity on physical health of the studied employees pre/post health belief model application (no=80).**

**Table (3): Percentage distribution of obesity effect on employees' self- esteem pre/post health belief model application (no=80).**

| Self- esteem | Pre Program | | | Post Program | | | Chi X2 |
|---|---|---|---|---|---|---|---|
| | Always | Sometimes | Rarely | Always | Sometimes | Rarely | |
| | % | % | % | % | % | % | |
| Less my self-esteem | 86.25 | 7.50 | 6.25 | 5.00 | 18.00 | 77.00 | 73.987 |
| Less my self-confidence | 62.50 | 18.50 | 19.00 | 11.7 | 17.4 | 70.9 | 29.981 |
| less love for myself | 37.50 | 51.50 | 11.00 | 5.00 | 15.5 | 80.00 | 92.249 |
| Afraid of rejected by others | 81.25 | 9.25 | 9.50 | 7.2 | 19.1 | 73.7 | 49.988 |
| Avoid looking in mirrors or seeing myself in pictures | 60.00 | 28.00 | 12.00 | 1.1 | 2.00 | 96.8 | 90.417 |
| Total | 75.00 | 10.8 | 5.2 | 10.4 | 11.0 | 78.6 | *132.701 |

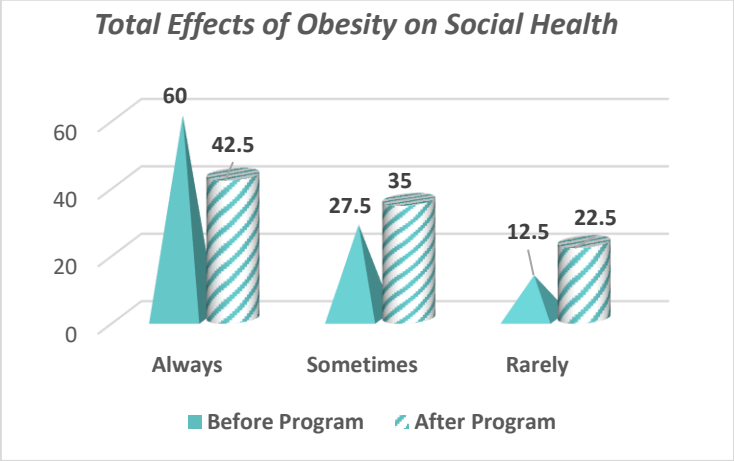


**Figure (6): Percentage distribution of total obesity effect on employees' social health pre/post health belief model application (no=80).**

**Table (4): Multiple regressions analysis of employees' behavior intention of weight reduction (n=80).**

| Variables | All | | Obese class I | | Obese class II | | Obese class III | |
|---|---|---|---|---|---|---|---|---|
| **Dependent variable: Behavior intention of weight reduction** | | | | | | | | |
| **Independent variables** | **(R2 = 0.149** | | **(R2 = 0.179)** | | **(R2 = 0.123)** | | **(R2 = 0.251)** | |
| | **β** | **F** | **β** | **F** | **β** | **F** | **β** | **F** |
| Perceived threat | 0.14 | 2.98* | 0.23 | 2.37* | 0.03 | 0.34 | 0.04 | 0.11 |
| Perceived benefits | 0.15 | 0.79 | 0.08 | 0.68 | 0.11 | 1.78 | 0.12 | 0.78 |
| Perceived barriers | 0.03 | 0.46 | 0.03 | 0.11 | 0.07 | 0.81 | 0.03 | 0.29 |
| Cues to action | 0.31 | 2.97** | 0.18 | 1.28 | 0.22 | 1.94 | 0.66 | 2.69* |
| Perceived self efficacy | 0.08* | 2.79*** | 0.12 | 2.65** | 0.7 | 1.79 | 0.11 | 0.98 |

**Significantly different at *P < 0.05, **P < 0.01 and ***P < 0.001.**

**Table (5): Comparison of total correct knowledge and practices of the studied employees pre/post application of health belief model (n=80).**

| Employees' knowledge | | Practices | | | |
|---|---|---|---|---|---|
| | | **Mean** | **±** | **SD** | **T** |
| Knowledge related obesity | Pre | 7.104 | ± | 7.471 | 21.926 |
| | Post | *31.067 | ± | 9.098 | 9.612 |
| Knowledge about nutritional habits | Pre | 2.970 | ± | 4.105 | 17.977 |
| | Post | *14.978 | ± | 5.615 | 12.013 |
| Total employee's knowledge | Pre | 13.106 | ± | 17.022 | 23.978 |
| | Post | 89.998 | ± | 25.997 | 14.102 |

**Table (6): Correlation between employee's practices and HBM (n=80).**

| Health Belief Model | Employees' practices | |
|---|---|---|
| | **r** | **P-value** |
| Perceived threat | 0.882 | <0.001* |
| Perceived benefits | 0.701 | <0.001* |
| Perceived barriers | 0.753 | <0.001* |
| Cues to action | 0.322 | <0.001* |
| Perceived self efficacy | 0.355 | <0.001* |

**Discussion:**

Overweight and obesity are medical conditions that point to an excessive buildup of body fat and have detrimental impact on health. Via epidemiological research, obesity and overweight have been found as risk factors for several diseases, including diabetes, different malignancies, cardiovascular disease, and hypertension. The health of people is at risk in many nations because to the rising incidence of high BMI and the mortality that follows. Additionally, it harms people's health and causes a financial strain on society **(Abdelaal et al., 2017; Dai et al., 2020).** The main contributors to the rise in obesity and overweight in the Eastern Mediterranean (EMRO) include alterations in lifestyle, such as poor eating patterns, inactivity, and alterations in culture, society, and the economy. Yet, adopting a plant-based diet and engaging in regular physical activity lowers the risk of obesity. **(Mokdad et al., 2018; Marconcin et al., 2021).**

Regarding socio- demographic characteristics of the employee, aged from 30 to 40 years. Less than two thirds of them were males, two thirds of employees were married, more than two thirds of them have high education and were living in urban areas, and more than two fifths of employee had sufficient income. As the nature of job; more than three quarters of them were employees (office work jobs); This might be because their jobs don't demand much physical exertion, which makes them more susceptible to obesity. This finding in the same line with **Zubery et al., (2021),** who studied " Prevalence of Overweight and Obesity, and Its Associated Factors Among Health-care Workers, Teachers, and Bankers in Arusha City, Tanzania " and reported that, the majority of the respondents were aged 30–39 years, around two thirds of them were married and just about half of the respondents had attended college education. Also in the same line with **Ahmed & Naji (2021),** who assessed the health beliefs regarding weight control among overweight and obese employees in university of Mosul and reported that the most of the studied participants aged between 30-39 years, majority of them were males and had bachelor's degree of education, while the majority of them were practicing office work

In addition to, **Jorvand et al., (2019),** who studied the determinants of daily exercises among employees with overweight or obesity after the health belief model application in Ilam city, Iran" and reported that, less than two thirds of the participants were men and majority of them were married.

The study findings suggest that a significant proportion of employees were at different levels of risk for obesity based on their body mass index. Approximately twenty percent of the employees were classified as obesity class 1 (low risk), more than one-third were classified as obesity class II (moderate risk), and two-fifths were classified as obesity class III (high risk), while just over ten percent of the employees were overweight. The study speculates that this could be due to the employees with higher income having greater access to food options, which may increase the risk of obesity. This result disagree with **Kunyahamu et al., (2021)** who studied the obesity among health care workers whose professions are expose them to high risk of being obese, east coast region of Peninsular Malaysia" and reported that one third of the study subjects were overweight, and fifth of them were obese which classified as obesity class I (15.3%), obesity class II (4.1%) obesity class III (1.7%). Also consistent with **Simfukwe et al., (2017)** who studied " Perceptions, attitudes and challenges about obesity and adopting a healthy lifestyle

among health workers in Pietermaritzburg, KwaZulu-Natal province, South Africa" and reported that one third of studied workers were obese, and fifth of them were overweight.

In addition to, **Henke et al., (2016),** who studied "The effects of telecommuting intensity on employee health, Newark, New Jersey" and reported that telecommuters employees had the highest percentage at risk for obesity. Moreover agreement with **Aslam et al., (2018)** who studied the prevalence of obesity among nursing personnel working in tertiary care hospital and illustrated that the people working in the health care industry are associated with a significantly higher risk of obesity.

Regarding the employees total knowledge score pre and post application of health belief model regarding nutritional habits, obesity and levels of obesity risk, the present study demonstrates that more than one third of them had correct knowledge about nutritional habits pre application of model, while increased to more than three quarters of them post application of model with highly statistically significant differences pre/post program. Also the current study illustrated that, there were the half of employees had total correct knowledge about obesity and levels of risk for obesity pre-program, after the implementation of the HBM program, there was a significant improvement in the knowledge of the majority of the employees, as evidenced by the highly significant differences between their pre and post-program scores. This improvement may be due to the employees' initial lack of awareness about obesity.

These similar with **Soliman et al., (2018)** who studied "Application of health belief model among youth at high risk for obesity in West Bank, Palestine" and found that The results of the study indicate that the majority of the participants exhibited an improvement in their knowledge of obesity, as well as their nutritional habits and practices, following the application of the HBM program. These improvements were highly statistically significant, with a p-value of less than 0.001.

Also consistent with **Khumros et al., (2019),** Effectiveness of modified health belief model-based intervention to reduce body mass index for age in overweight junior high school students in Bangkok, Thailand" and reported that The significant benefits observed in increased health knowledge and health behavior Among the study participating post health belief model-based intervention.

**Ahmed and Naji (2022)**, conducted a randomized controlled trial at the University of Mosul in Iraq, which evaluated the effectiveness of the Health Belief Model (HBM) in improving weight control beliefs among employees. The results of their study indicated that there was a significant positive change in the knowledge of employees following the application of educational programs based on the HBM.

The study found that prior to the application of the health belief model, approximately one-fifth and one-quarter of the employees had always and sometimes practiced healthy eating habits, respectively, whereas post-application, more than half and over two-fifths had always and sometimes practiced healthy eating habits, respectively. Similarly, less than one-fifth and one-fifth of employees had always and sometimes practiced regular exercise prior to the application of HBM, respectively, while after application, the majority and one-fifth had always and sometimes practiced regular exercise, respectively. There was a highly significant difference between the employees' practices of eating healthy food and regular exercise before and after HBM application,

indicating the efficacy of HBM in influencing employees' beliefs toward a healthy diet and regular exercise.

These findings are agreed with **Andenas et al., (2014),** who conducted a study on "Changes in health-related quality of life in people with morbid obesity attending a learning and mastery course, Oslo, Norway" and reported a statistically significant improvement in self-care and physical activity during the twelve months follow-up among participating employees.

Also consistent with **Upadhyaya et al., (2020),** who studied "Obesity prevention worksite wellness interventions for health care workers, Texas. " and reported that a statistically significant positive association of the intervention on weight-related outcomes, including lower BMI, lower weight, body fat, and/or waist circumference. In addition to changes in behavior outcomes (dietary improvement and increased physical activity).

The study revealed that prior to the application of HBM, approximately three-quarters and less than one-fifth of employees always experienced the obesity effect on their physical health. This proportion altered to about one-fifth post-application. Furthermore, less than two-thirds of employees always experienced social effects pre-application, which changed to about one-quarter post-application. Additionally, three-quarters of employees always experienced the obesity effect on their self-esteem pre-application, which altered to more than three-quarters of employees being rarely affected post-application. The results showed a significant difference between pre- and post-application. These findings suggest that acquiring accurate information regarding obesity and adopting healthy dietary habits are critical factors in improving one's physical health, social health, and self-esteem.

This finding agreed with **Rounds et al., (2020)**, who studied "The impact of incentives on weight control in men. The University of Vermont, Burlington, VT, USA" and reported that a health promotion program toward weight control had an effective effect on participants' beliefs, body mass index, body image, and self-esteem. Also consistent with **Simfukwe et al., (2017)**, who reported that the study participating who kept fit and followed a healthy diet had enhanced self-image and improving personal health and well-being.

In this study, the researchers used multiple regression analysis to examine the impact of various factors from the HBM on the weight loss intentions of employees. The findings revealed that three factors from the HBM - perceived threat, cues to action, and perceived self-efficacy - were significantly linked to weight reduction intentions. Among these factors, cues to action was found to be the most influential predictor. While perceived benefits and perceived barriers weren’t significant differences among employees. This might be due to HBM variables affecting employees' beliefs and behavior towards healthy food and physical activity to control weight and prevent obesity. This could be as a result of HBM variables influencing employees' attitudes and actions regarding eating well and exercising to maintain a healthy weight and avoid obesity.

This result agreement with **Ahmed & Naji, (2022),** who reported that the HBM related to weight control and intention for weight control was increased in all health beliefs model components: perceived severity, perceived susceptibility, perceived barriers, perceived benefits, cue to action, perceived self-efficacy, and behavioral intention for weight control after intervention with significant differences between pre-test and post-test in the overlap dimension. Also in the

same line with **Jorvand et al., (2019),** who showed that, According to the study, perceived intensity and self-efficacy were the two most influential predictors of daily exercise among employees who were overweight or obese. The results suggest that self-efficacy plays a crucial role in behavior change and increasing physical activity. This is because self-efficacy helps individuals feel capable of performing healthy behaviors, such as daily exercise and physical activity. This indicated Self-efficacy is therefore essential for altering behavior and increasing physical activity. Moreover, self-efficacy gives someone the confidence to engage in healthy behavior (daily exercise and physical activity).

The current study found a significant improvement in the total correct knowledge and practices of the studied employees regarding obesity and nutritional habits post application of HBM. This improvement was highly statistically significant with P<0.001. This positive change in knowledge may be attributed to the application of HBM, which can lead to a change in the employees' behavior towards healthy food and physical activity to control weight. This finding is consistent with a study by **Malverdy & Kazemi (2016)**, which suggested It is possible that a Health Belief Model can serve as a predictor of weight management behaviors, such as dietary and physical activity behaviors. Furthermore, **Ahmed & Naji (2022),** reported that employees' behavior towards healthy food and physical activity to control weight was improved after the educational program application that was based on the health beliefs model.

The present study observed a robust and positive relationship between employee behavior and the health belief model, with highly significant differences at P<0.001. This outcome is in line with the results reported by **Malverdy & Kazemi (2016),** who found a significant correlation between the stages of behavioral change for nutrition and physical activity and various health belief components, such as perceived sensitivity/intensity, perceived benefits, perceived barriers, and self-efficacy. They also discovered that perceived sensitivity/intensity had a positive and significant correlation with perceived benefits and self-efficacy, and a negative and significant correlation with perceived barriers. These findings are similar to the previous research conducted by **Rahimi et al., (2016),** who studied the predictors of preventive behaviors for cardiovascular diseases in women referred to health treatment centers in Qom City, Iran, based on the health belief model. They observed that self-efficacy and perceived benefits were the most predictive factors for preventive behavior and physical activity. **Soliman et al., (2018)** also found a positive relationship between students' behavior and the selected health belief model, with highly significant differences at P<0.001. These results are consistent with those of **Jorvand et al., (2019),** who found a significant positive correlation between the constructs of perceived severity, perceived benefits, and self-efficacy. They further observed that there was a significant relationship between daily exercise and self-efficacy and perceived severity, with self-efficacy being the most influential predictor of daily exercise among the participants.

## Conclusion

In concluding, the findings of the study indicate that there was a significant improvement in the employees' knowledge, nutritional habits, and practices concerning obesity after the application of the health

belief model. The study also showed a positive and highly significant correlation between employees' practices and the health belief model. These results support and confirm the hypothesis of the study.

**Recommendations:**

1- Routine obesity screening for dieting, and other weight reduction methods should be fundamental part of the continuing medical care provided by all health care providers. According to HBM, it's important to taken into consideration the advantages and disadvantages of changing health behavior because people are more inclined to take action when they perceive advantages than disadvantages.

2- Maintain regular follow up for employees who are overweight or obese and offer them continuous health education programs to improve their lifestyle practices to improve their disease prognosis.

3- For generalization of results, it is advised that the study be repeated with a larger sample and in different Egypt geographic regions.

4- Further research the effect of self-efficacy on individualized education programs, goal-setting practices, and training and assistance methods.

**References**

**Abdelaal M., le Roux C. W. & Docherty N. G (2017).** Morbidity and mortality associated with obesity, Annals of Translational Medicine, vol. 5, no. 7, p. 161.

**Aboulghate, M., Elaghoury, A., Elebrashy, I., et al. (2021).** The Burden of Obesity in Egypt. Frontiers in Public Health, 9, Article ID: 718978.https://doi.org/10.3389/fpubh.2021.718978

**Ahmed M., & Naji A B., (2021).** Assessment of health beliefs regarding weight control among overweight and obese employees in university of Mosul: Applying health belief model. KUFA Journal for Nursing Sciences.Vol.11 No. 2.

**Ahmed M., & Naji A B., (2022).** Efficacy of the health belief model in improving weight control beliefs among employees in university of Mosul A randomized controlled trial., Teikyo Medical Journal., Volume 45, Issue 01: 4659 – 4664.

**Andenas R, Fagermoen M, Eide H &Lerdal A (2014).** Changes in health-related quality of life in people with morbid obesity attending a learning and mastery course: A longitudinal study with 12-months follow-up. Oslo, Norway. Bio Med central, 10: 95.

**Aslam, M., Siddiqui, A.A., Sandeep, G., & Madhu, S.V. (2018).** High prevalence of obesity among nursing personnel working in tertiary care hospital. Diabetes Metab. Syndr. International Journal of **Environmental Research and Public Health**, 18, 4381 4 of 8.,12, 313–316.

**Baktash MQ, & Naji AB. (2019).** Efficacy of the health belief model in enhancing weight loss behaviors to prevent stroke among overweight and obese geriatrics homes residents in Baghdad city. kufa J Nurse Sci [Internet]. 2019; 9 (2). Available from: https://www.iasj.net/iasj/article/174635.

**Dai H., Alsalhe T. A., Chalghaf N., Ricc`o M., Bragazzi N. L., & Wu J. (2020).** The global burden of disease attributable to high body mass index in 195 countries and territories, 1990-2017: an analysis of the Global Burden of Disease Study, PLoS Medicine, vol. 17, no. 7, e1003198**.**

**Dobbs R, Sawers C, Thompson F, Manyika J, Woetzel J, Child P &et al (2018).** Overcoming obesity: an initial economic analysis executive summary. McKinsey Global Institute. Available from: https://www.mckinsey.com

**Gillis, A. J. (2016).** Lessons learned from listening: the meaning of adolescent life style choices. The ninth international congress of women's health issues Egypt: Alexandria University. Faculty of Nursing.

**Henke R M., Benevent R., Schulte P., Rinehart C., Crighton A., Corcoran M., (2016).** The effects of telecommuting intensity on employee health, Newark, New Jersey. American Journal of Health Promotion November 2016, Vol. 30, No. 8: 604- 612**.**

**Jorvand R., Sadeghirad K., Mehrizi A., Ghofranipour F., &Tavousi M (2019).** Determinants of daily exercises among employees with overweight or obesity: the application of health belief model. Journal of Research & Health. Social Development & Health Promotion Research Center. Vol. 9, No. 5, Sep & Oct 2019 Pages: 387- 393

**Khumros W., Vorayingyong A., Suppapitiporn S., Rattananupong T.,& Lohsoonthorn V(2019).** Effectiveness of modified health belief model-based intervention to reduce body mass index for age in overweight junior high school students in Bangkok, Thailand. Journal of Health Research Vol. 33 No. 2, pp. 162-172.

**Kunyahamu M S., Daud A & Jusoh N., (2021).** Obesity among health care workers: which occupations are at Higher risk of being obese, east coast region of Peninsular Malaysia.Int. J. Environ. Res. Public Health 2021, 18, 4381. https://doi.org/10.3390/ijerph18084381 https://www.mdpi.com/journal/ijerph.

**Malverdy Z, & KazemiA (2016).** Health beliefs and stages of changes to improve behaviors among obese and overweight women undergoing preconception care Iranian Journal of Nursing and Midwifery Research | Published by Wolters Kluwer - Medknow Vol. 21 | Issue 6: 595-600.

**Marconcin P., Ihle A., Werneck A. O.& et al (2021).** The association of healthy lifestyle behaviors with overweight and obesity among older adults from 21 countries, Nutrients, vol. 13, no. 2, p. 315.

**Mokdad A. H., Bcheraoui C. El, Afshin A., Charara R., Khalil I., & Moradi-Lakeh M. (2018).** Burden of obesity in the eastern mediterranean region: findings from the global burden of disease, International Journal of Public Health, vol. 63.

**Odysseos, C., & Avraamidou, M. (2020).** Weight management for athletes: Important things to be considered. Arab Journal of Nutrition and Exercise (AJNE), 1(3), 155. https://doi.org/10.18502/ajne.v1i3.1232

**Polyzos S.A., & Mantzoros C.S (2019).** Obesity: seize the day, fight the fat. Metabolism. 2019;92:1–5. doi: 10.1016/j.metabol.2018.12.011.

**Rahimi T, Shojaei S, Mousavi Miyandashti Z, Jafary Nodoushan Z, & Farahabadi M (2016).** Predictors of preventive behaviors of cardiovascular diseases: Based on health belief model in women referred to health treatment centers in Qom City, Iran. Qom University of Medical Sciences Journal; 9(11): 51-9.

**Robertson J, Lindgren M, Schaufelberger M, Adiels M, Björck L, Lundberg CE & et al (2020).** Body mass index in young women and risk of cardiomyopathy: a long-term follow-up study in Sweden. Circulation. 2020; 141(7):520–9.

**Rounds, T., Crane, M., & Harvey, J. (2020).** The impact of incentives on weight control in Men: A randomized controlled trial. The University of Vermont, Burlington, VT, USA American Journal of Men's Health, 14 (1).

**Semlitsch T, Stigler FL, Jeitler K, Horvath K, & Siebenhofer A.(2019).** Management of overweight and obesity in primary care—A systematic overview of international

evidence-based guidelines.Obes Rev. 2019; 20(9):1218–30.

**Simfukwe P., Van Wyk B & Swart C., (2017).** Perceptions, attitudes and challenges about obesity and adopting a healthy lifestyle among health workers in Pietermaritzburg, KwaZulu-Natal province, South Africa. African Journal of Primary Health Care & Family Medicine ISSN: (Online) 2071-2936, (Print) 2071-2928.

**Soliman N M., Elsayied1 H A., &Shouli M M (2018).** Application of health belief model among youth at high risk for obesity in West Bank (Palestine). American Journal of Nursing Science; 7(3-1): 86-96.

**Thongworn S, & Sirisuk V (2018).** Weight control specific compensatory health beliefs: Hypothetical testing and model extension. Kasetsart J Soc Sci [Internet]. 2018; 39(2):312–9. Available from: https://doi.org/10.1016/j.kjss.2017.06.006.

**Upadhyay J., Farr O., Perakakis N., Ghaly W., &Mantzoros C (2018).** Obesity as a disease. Med Clin North Am. 2018;102:13–33. doi: 10.1016/J.MCNA.2017.08.004.

**Upadhyaya M., Sharma S., Pompeii A.,Sianez M, & Morgan R (2020).** Obesity prevention worksite wellness interventions for health care workers: A Narrative review. Workplace Health & Safety., Texas., USA; vol (68) no. 1 32-49.

**Vandali V. (2017).** Prevention of Obesity: Nurse's Role., Journal of Clinical and Nursing Research., PP Savani University, Surat, Gujarat 394125, Inida.,1(2): 44-47.

**World Health Organization (2018)**. Obesity and overweight: Key facts. Available from: http://www.who. int/news-room/fact-sheets/detail/obesity-and-overweight.

**World Health Organization (2021).** Noncommunicable diseases. Available online at:https://www.who.int/news-room/factsheets/detail/noncommunicable-diseases (accessed July 14, 2021).

**Younis, N. M., Ahmed, M. M., & Abdulsalam, R. R. (2021).** Assessing quality of life in palliative care. Bahrain Medical Bulletin, 43(3), 594–596.

**Yuan F, Gong W, Ding C, Li H, Feng G, Ma Y & et al(2021).** Association of physical activity and sitting time with overweight/obesity in chinese occupational populations. Obes Facts. 14(1):141–7.

**Zubery D., Kimiywe J., &Martin H (2021).** Prevalence of overweight and obesity, and its associated factors among health-care workers, teachers, and bankers in Arusha city, Tanzania, Dove Press journal: 14: 455–465**,** downloaded from https://www.dovepress.com/ by 156.172.52.165 on 16-Sep-2021.

## تأثير نموذج المعتقد الصحي بين موظفي شركة بنها للاتصالات المصرية المعرضين لخطر الإصابة بالسمنة

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أصبحت السمنة مشكلة صحية عامة كبيرة وتحتل المرتبة السادسة بين أسباب الوفاة في جميع أنحاء العالم ، وقد تم تحديد البالغين العاملين على أنهم فئة عالية الخطورة أكثر عرضة للتنبؤ بزيادة الوزن والسمنة من عامة السكان. لذا هدفت هذه الدراسة إلى تقييم تأثير نموذج المعتقدات الصحية بين موظفي شركة بنها للاتصالات المصرية المعرضين لخطر الإصابة بالسمنة. وقد أجريت هذه الدراسة في شركة بنها للاتصالات المصرية على عينة ملائمة؛اشتملت عينة الدراسة على ثمانون موظفًا. وأظهرت النتائج أن حوالي خمس الموظفين يعانون من السمنة من الدرجة الأولى (مخاطر منخفضة) بينما كان أكثر من ثلثهم يعانون من السمنة من الدرجة الثانية (مخاطر متوسطة) وحوالي الخمسين كانوا يعانون من السمنة من الدرجة الثالثة (مخاطر عالية للسمنة)؛ كما أظهرت النتائج أن هناك علاقة ذات دلالة إحصائية عالية بين معلومات الموظفين وممارساتهم فيما يتعلق بالسمنة والغذاء الصحي والتمارين قبل وبعد تطبيق. أدى تطبيق نموذج المعتقد الصحي إلى تحسن كبير في معلومات الموظف وعاداته الغذائية وممارساته فيما يتعلق بالسمنة؛ كانت هناك علاقة ذات دلالة إحصائية عالية بين الممارسات الكلية للموظفين نموذج المعتقد الصحي. **كما اوصت الدراية** بأن يكون الفحص الروتيني للسمنة والنظام الغذائي وطرق إنقاص الوزن الأخرى أحد مكونات الرعاية الطبية المستمرة التي تقدمها جميع الخدمات الصحية.