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Efficacy of the Health Beliefs Model –Based Intervention in Enhancing Workers' Adherence to Wearing Personal Protective Equipment in Diyala State Company: A Randomized Control Trial

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ABSTRACT

Objective(s): The study aims to determine the efficacy of the Health Belief Model – intervention in enhancing workers' adherence to wearing personal protective equipment at diyala state company.

Methodology: True experimental design, using randomized controlled trial approach for the period of February 1th 2024 through January 1th 2025. The sample of the study is "A probability" simple random sample and it consist of (100) worker, who are work at factories in Diyala state company. The sample is randomly selected and assigned to the study and control groups of (50) workers each for who are equally distributed from each factory. The intervention for the study group involved a health intervention lecture about occupational hazards and PPE used based on HBM. Analyzed data using SPSS, Version23 using descriptive statistics, and inferential statistics and mixed design analysis of variance (ANOVA).

Results: Findings of this study depict that there were statistically significant differences among all concepts of the health belief model related to occupational hazards prevention by using PPE.

Conclusion and Recommendations: This study concluded that Applying health belief model, demonstrates the importance of PPE use in prevention of occupational hazard or accident in workplace and has a positive impact on workers' behaviors. Finally, the study recommends the need to repeated future studies based on HBM on large number of workers in the industrial or manufactory in Iraqi, with the goal of enhancing workers' behavior toward PPE using.

1. INTRODUCTION

Occupational accidents affect the lives of employees, institutions and society. Although in many cases they are transient and last for a few weeks, in other cases they are permanent. Severe injuries affect the social and economic status of employees and their families. Two international organizations, the International Labour Organization (ILO) and the World Health Organization (WHO), are concerned with occupational safety and health issues that have been validated through long-standing cooperation [(1).]

Electrical hazards pose a serious threat to worker safety. Many workers are unaware of the potential electrical hazards present in their work environment, putting them at greater risk for electrocution and electrical-related accidents. Unsafe equipment, unsafe work, and working with live electrical circuits can lead to electrical accidents, injuries, and even death [(2)].

Workplace accidents are the leading cause of major disabilities worldwide. The (ILO) recorded in 2013 that the accidental death rate worldwide reached 2 million cases each year due to workplace accidents and those suffering from work-related diseases [(3)].

In the United States, occupational injuries affect health care providers, and needle stick and sharps injuries account for 80% of all injuries in health care settings[(4).]

Environmental health includes the assessment and control of physical, chemical and biological hazards that may have a potential impact on human health in the work environment [(5).]

The Health Belief Model (HBM) was developed initially in the early 1950s by social psychologists. Since then, it has been widely drawn upon to explain alterations in health-related behaviors and to guide health behavior interventions. This model

is employed to help change behaviors workers to ward occupational accident and ways of it preventive. Therefore HBM concepts are perceived susceptibility and severity, perceived benefits of preventive behavior, perceived barriers to preventive behavior, cues to action, and self-efficacy in performing preventive behavior [6;7].

The definition of the model concepts are as follows: "Perceived susceptibility is beliefs about the likelihood of developing a disease or condition. Perceived severity; includes beliefs about the seriousness of developing a disease or condition, including the consequences. Perceived benefits; beliefs about the positive aspects of adopting a health behavior (e.g., the effectiveness of the behavior in reducing risks or negative consequences). Perceived barriers; beliefs about the obstacles to performing a behavior, and the negative aspects (perceived and psychological costs) of adopting a health behavior. Cues to action; internal and external factors that can lead to a health behavior. Self-efficacy; beliefs that one can perform the recommended health behavior" [8;9].

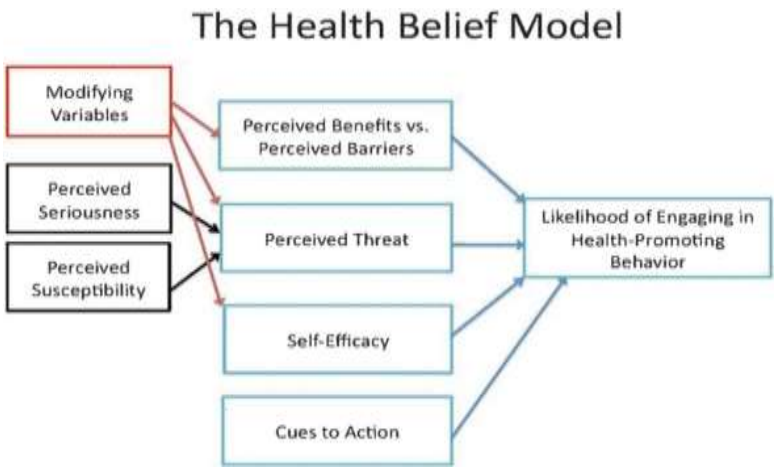

Fig.1the constructs of Health Belief Model .

Significant of study

The work environment has many characteristics that may affect the well-being of workers. The focus here is on better understanding those aspects of the work environment that are believed to have a significant impact on the psychological and social health and productivity of workers [10].

Electrical injuries are a serious health and safety issue in the workplace. There were nearly 6,000 fatal electrical injuries to workers in the United States between 1992 and 2013. There were also 24,100 nonfatal electrical injuries from 2003 to 2012 [11].

Personal protective equipment (PPE) refers to protective clothing, helmets, or other equipment used by workers to reduce specific occupational hazards. In other words, PPE includes a wide range of equipment designed and manufactured to protect different parts of the body (from hair to feet) against a variety of potential hazards in work environments. In effect, PPE prevents injury or infection by creating a barrier against hazardous agents [12].

Improving workers' health promotion behaviors can prevent occupational injuries in the workplace. The workplace can be considered a suitable environment for training and shaping health protection behaviors and implementing screening programs for a wide range of workers [13].

Worker exposure to lead is most often occupational hazard occurs in most industries such as manufacturing, painting, smelting, construction, and lead refining. The risk of lead poisoning is greatest when workers breathe lead fumes and dust, or when they drink, smoke, and eat in or near contaminated areas. Workers can accidentally expose their home environment and family members by bringing lead dust into their homes on their clothing, skin, and shoes. People who work in factories and workshops that use materials containing lead should be protected from lead poisoning [14].

Objectives of the study

Aim of study is to determine the efficacy of the Health Belief Model – based intervention in enhancing workers' adherence to wearing PPE at diyala state company.

2. METHODOLOGY

Design of the Study:

True experimental design, using randomized controlled trial approach is conducted to determine the efficacy of applying the

Health Beliefs Model in enhancing health behaviors of workers related to PPE use at Diyala state company for the period of February 1th 2024 through January 1th 2025.

Settings of the Study

The study is conducted in Diyala state company in Baquba City.

Sample of the Study

A "probability" simple random sample of (100) workers who agreed to participate in this study. The study subjects were recruited from two factories in this company which were distribution transformer factory, and power transformer factory. Subjects were randomly assigned into both study and control groups; 50 workers for the study group and 50 workers for the control group.

Study Instrument:

A developed self-report questionnaire is used in the present study. The questionnaire is comprised of two parts.

Part I: Worker's Demographic Characteristics

This part consists of the worker's socio-demographic characteristics of age, gender, marital status, educational level, type of job, year's experiences and monthly income.

Part2: measuring the behaviors of workers in the prevention of occupational hazard and PPE using through applied the concepts of the HBM:

Perceived susceptibility Scale: This part is comprised of (9) item those measure workers' perceived susceptibility of occupational accident or hazards. This scale is a 5-point Likert type scale is measured as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1).

Perceived Severity Scale: This part is comprised of (10) item that measure workers' Perceived Severity of occupational accident or hazards. This scale is a 5-point Likert type scale is measured as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1).

Perceived benefits: This part is comprised of (4) item those measure workers' perceived benefits of occupational accident or hazards prevention by PPE use. This scale is a 5-point Likert type scale is measured as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1).

Perceived Barriers: This part is comprised of (8) item that measure worker' Perceived Barriers of occupational accident or hazards prevention and avoid PPE use. This scale is a 5-point Likert type scale is measured as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1).

Cues to action: This part is comprised of (8) item that measure workers' cues to action of occupational accident or hazards prevention and PPE use. This scale is a 5- point Likert type scale is measured as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1).

Perceived Self-efficacy's: This part is comprised of (6) item that measure workers' perceived Self-efficacy of occupational accident or hazards prevention and PPE use. This scale is a 5-point Likert type scale is measured as strongly agree (5), agree (4), neutral (3), disagree (2), strongly disagree (1).

Validity

Content validity is achieved by consulting a panel of (10) experts. These experts are (5) faculty members at the College of Nursing in the University of Baghdad, (2) faculty member at the College of nursing University of Karbala, (2) faculty member at the College of nursing University of Babylon. (1) Faculty members at the College of health and medical technologies-Baghdad. The participants are given a copy of the intervention program and the study instruments and are then asked to evaluate the clarity and suitability of their content. The participants' feedback indicated that both the intervention program and the study tools were comprehensible and sufficient.

Reliability

The internal consistency method was used to determine the reliability of questionnaire in current study; internal consistency reliability measures the consistency between different items of the instrument. The internal consistency between items was determined by using Cornbrash's alpha coefficient. The Statistical Package for Social Science Program (IBM SPSS) version 26.0 was applied to calculate the two methods of reliability; a sample of 10 participants. The results of this computation reveal that the correlation coefficient confirms that the instruments used in this study are highly dependable measures for the phenomenon being investigated.

Pilot study

In order to determine the reliability of the education program and study instrument, a pilot study was conducted by (10)

workers'. Workers' in the pilot study have the similar criteria of the original study sample. It was conducted at Diyala state company throughout the period of June10th, 2024 to 14th 2024.The sample of the pilot study was excluded from the main study sample.

Ethical Consideration

Worker's, who have participated in the study, have signed consent form for their agreements for the sharing in the study and the participants informed that their participation is voluntary and the information will be treated confidentially and used for the research purposes only.

Data Collection

Data are collected through the use of the study instruments and the application of the pretest-posttest and approach as means of data collection, from June 15th, 2024 to September 20nd, 2024.

Data analysis techniques

The data were analyzed and interpreted through use of the application of Statistical Package for Social Sciences (SPSS), version 26.0.

3. RESULT

Table (1) presents the socio-demographic characteristics of workers in the study and control groups. The study group consisted of 68% males and 32% females, while the control group had a higher proportion of males (78%) and fewer females (22%). Both groups had a similar age distribution, with most participants in the 45-54 age range; the study group had a mean age of 46.5 years (SD = 8.6), slightly older than the control group's mean age of 45.5 years (SD = 7.9). Most participants in both groups were married (70% in the study group and 72% in the control group), with similar proportions of unmarried individuals. The study group had a higher percentage of individuals with a bachelor's degree (34%) compared to the control group (14%), while the control group had more individuals with secondary education (46%) than the study group (30%).

Both groups were predominantly employed in permanent positions (92% in the study group and 90% in the control group). The distribution of years of experience was similar, with many having 23 years or more. Monthly income was slightly higher in the study group (M = 957,000 IQD, SD = 351,000) compared to the control group (M = 928,000 IQD, SD = 573,000), with the control group having a larger percentage of

workers earning between 601,000 and 900,000 IQD.

Table (1): Distribution of the Workers according to their Socio-demographic Characteristics

No.	Characteristics		Study group		Control group	
			F	%	f	%
1	**Sex**	Female	16	32	11	22
		Male	34	68	39	78
		Total	***50***	***100***	***50***	***100***
2	**Age (Years)**	25 – 34	5	10	5	10
		35 – 44	10	20	13	26
		45 – 54	28	56	29	58
		55 and more	7	14	3	6
		Total	***50***	***100***	***50***	***100***
		M ± SD	***46.5 ± 8.6***		***45.5 ± 7.9***	
3	**Marital status**	Unmarried	6	12	7	14
		Married	35	70	36	72
		Divorced	4	8	3	6

		Widowed/er	5	10	4	8
		Total	***50***	***100***	***50***	***100***
4	**Level of education**	Primary school	6	12	4	8
		Intermediate school	2	4	5	10
		Secondary school	15	30	23	46
		Diploma	10	20	11	22
		Bachelor	17	34	7	14
		Total	***50***	***100***	***50***	***100***
5	**Employment form**	Temporary/contract	4	8	5	10
		Permanent	46	92	45	90
		Total	***50***	***100***	***50***	***100***
6	**Years of experience**	5 – 10	8	16	9	18
		11 – 16	3	6	4	8
		17 – 22	11	22	11	22
		23 and more	28	56	26	52
		Total	***50***	***100***	***50***	***100***
		M ± SD	***21.6 ± 8.2***		***21.9 ± 9.2***	
7	**Monthly income (Iraqi Dinar)**	300000 – 600000	8	16	7	14
		601000 – 900000	16	32	24	48
		901000 – 1200000	13	26	14	28
		1201000 – 1500000	10	20	4	8
		1501000 and more	3	6	1	2
		Total	***50***	***100***	***50***	***100***
		M ± SD	***957000 ± 351000***		***928000 ± 573000***	

Table (2): indicates that applying health belief models is significantly improved all components of workers' behavior regarding personal protective equipment use. Perceived susceptibility (F(1.717) = 431.297, p = .000, Partial Eta Squared = .898), perceived severity (F(1.571) = 579.219, p = .000, Partial Eta Squared = .922), perceived benefits (F(1.611) = 353.526, p = .000, Partial Eta Squared = .878), perceived barriers (F(1.991) = 10.991, p = .000, Partial Eta Squared = .883), cues to action (F(1.963) = 411.331, p = .000, Partial Eta Squared = .869), and self-efficacy (F(1.881) = 288.133, p = .000, Partial Eta Squared = .855) all showed highly significant increases from pretest to posttest I and II. These results highlight the strong effectiveness of the intervention in enhancing workers' health beliefs and behaviors.

Table (3): In the control group, there were no significant changes in health belief model components over time. The analyses showed non-significant differences for perceived susceptibility (F(1.715) = 2.849, p = .071, Partial Eta Squared = .055), perceived severity (F(1.740) = 4.113, p = .064, Partial Eta Squared = .077), perceived benefits (F(1.658) = 3.740, p = .056, Partial Eta Squared = .071), perceived barriers (F(1.000) = 5.064, p = .069, Partial Eta Squared = .094), cues to action (F(1.183) = 8.889, p = .063, Partial Eta Squared = .154), and self-efficacy (F(1.396) = 3.314, p = .059, Partial Eta Squared = .063). These results indicate that, without the intervention, there were no meaningful changes in workers' health beliefs regarding personal protective equipment.

Table (4): The HBM significantly improved workers' behaviors regarding the use of personal protective equipment in the

study group. The overall scores for health beliefs model components increased significantly from pretest (M = 121.80, SD = 9.723) to posttest I (M = 157.56, SD = 6.181) and posttest II (M = 164.86, SD = 7.335), with a highly significant effect observed (F= 822.193, p = .000, Partial Eta Squared = .944). This indicates a strong and significant impact of the intervention on enhancing workers' behaviors related to personal protective equipment use.

Table (5) indicate to exhibits that in the control group, there were no significant changes in overall health beliefs regarding the use of PPE over time. The mean scores remained relatively stable across pretest (M = 124.50, SD = 11.956), posttest I (M = 126.64, SD = 7.984), and posttest II (M = 126.70, SD = 13.151), with non-significant differences observed (F= .773, p = .465, Partial Eta Squared = .016). This indicates that, without the intervention, there were no meaningful improvements in health beliefs among workers.

4. DISCUSSION

According to (Table 1) the results participants are evenly distributed presents the socio-demographic characteristics of workers in the study and control groups. The study group consisted of 68% males and 32% females, while the control group had a higher proportion of males (78%) and fewer females (22%). Most participants in both groups were married (70% in the study group and 72% in the control group), with similar proportions of unmarried individuals. The study group had a higher percentage of individuals with a bachelor's degree (34%) compared to the control group (14%), while the control group had more individuals with secondary education (46%), than the study group (30%). This result in this study is consistent with [15] who found that most of the study participants were male (79%). A significant portion of participants own their married (63%).then the majority of study participant have educational level were Bachelor's (44%).

Both groups had a similar age distribution, with most participants in the 45-54 age range; the study group had a mean age of 46.5 years (SD = 8.6), slightly older than the control group's mean age of 45.5 years (SD = 7.9). . Both groups were predominantly employed in permanent positions (92% in the study group and 90% in the control group). The distribution of years of experience was similar, with many having 23 years or more, Monthly income was slightly higher in the study group (M = 957,000 IQD, SD = 351,000) compared to the control group (M = 928,000 IQD, SD = 573,000), with the control group having a larger percentage of workers earning between 601,000 and 900,000 IQD. This result in our study is consistent with [16]. who found that most of the study participants were age 50 and more (42.9%). A significant portion of participants work permanent positions are Fixed. Work experiences more than 10 years (48.2) but disagree wherein educational level was their most Illiterate (67.9).

Table (2).Applying of the HBM is significantly improved all components of workers' behavior regarding PPE use. Perceived susceptibility (F(1.717) = 431.297, p = .000, Partial Eta Squared = .898), perceived severity (F(1.571) = 579.219, p = .000, Partial Eta Squared = .922), perceived benefits (F(1.611) = 353.526, p = .000, Partial Eta Squared = .878), perceived barriers (F(1.991) = 10.991, p = .000, Partial Eta Squared = .883), cues to action (F(1.963) = 411.331, p = .000, Partial Eta Squared = .869), and self-efficacy (F(1.881) = 288.133, p = .000, Partial Eta Squared = .855) all showed highly significant increases from pretest to posttest I and II. These results highlight the strong effectiveness of the intervention in enhancing workers' health beliefs and behaviors. Our finding is agree with the result of the study Shakerinejad, et al [17] were found before the educational intervention, there was no significant difference in the mean HBM construct between the control and intervention groups (P>0.05). In contrast, after the educational intervention, a significant difference was observed between the control and intervention groups (P<0.05), according to the independent t-test.

Table (2): Efficacy of Health Beliefs Model Components on Workers' Behavior for Using Personal Protective Equipment in the Study Group (N=50)

Health Belief Model Components	Descriptive		Within-Subjects Effect (Greenhouse-Geisser)						
	Time	Mean (SD)	Type III Sum of Squares	df	Mean Square	F	P-value	Sig.	Partial Eta Squared
Perceived Susceptibility	Pretest	25.70 (3.638)	2376.653	1.717	1383.887	431.297	.000	**H.S**	.898
	Posttest I	33.54 (2.651)							
	Posttest II	34.64 (2.317)							

Perceived Severity	Pretest Posttest I Posttest II	18.80 (2.955) 27.22 (1.877) 28.58 (1.864)	2806.573	1.571	1786.372	579.219	.000	**H.S**	.922
Perceived Benefits	Pretest Posttest I Posttest II	12.08 (2.636) 16.96 (1.340) 17.64 (1.439)	919.840	1.611	570.935	353.526	.000	**H.S**	.878
Perceived Barriers	Pretest Posttest I Posttest II	25.82 (4.906) 28.40 (6.128) 29.66 (5.985)	383.160	1.991	192.426	10.991	.000	**H.S**	.883
Cues to action	Pretest Posttest I Posttest II	22.42 (2.483) 31.10 (2.859) 33.40 (2.365)	3353.213	1.963	1708.011	411.331	.000	**H.S**	.869
Self-efficacy	Pretest Posttest I Posttest II	16.98 (2.369) 23.34 (1.996) 24.74 (1.536)	1710.453	1.881	909.152	288.133	.000	**H.S**	.855

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value, Sig: Significance, H.S: High Significant

Table (3).showed in the control group, there were no significant changes in health belief model components over time. The analyses showed non-significant differences for perceived susceptibility (F(1.715) = 2.849, p = .071, Partial Eta Squared = .055), perceived severity (F(1.740) = 4.113, p = .064, Partial Eta Squared = .077), perceived benefits (F(1.658) = 3.740, p = .056, Partial Eta Squared = .071), perceived barriers (F(1.000) = 5.064, p = .069, Partial Eta Squared = .094), cues to action (F(1.183) = 8.889, p = .063, Partial Eta Squared = .154), and self-efficacy (F(1.396) = 3.314, p = .059, Partial Eta Squared = .063). These results indicate that, without the intervention, there were no meaningful changes in workers' health beliefs regarding personal protective equipment. Our results are consistent with study of Rangarz et al.[18] who showed before and after the educational intervention, where there was no significant difference in the HBM concept in control group at P>0.001 according to the mean ± SD test.

Table (3): Significant Differences in Health Beliefs Model Components among Workers in the Control Group (N=50)

Health Belief Model Components	Descriptive		Within-Subjects Effect (Greenhouse-Geisser)						
	Time	Mean (SD)	Type III Sum of Squares	df	Mean Square	F	P-value	Sig.	Partial Eta Squared
Perceived Susceptibility	Pretest Posttest I Posttest II	25.02 (3.317) 24.58 (2.391) 25.62 (1.989)	27.253	1.715	15.895	2.849	.071	N.S	.055
Perceived Severity	Pretest Posttest I Posttest II	25.02 (3.317) 24.58 (2.391) 25.62 (1.989)	42.280	1.740	24.292	4.113	.064	N.S	.077
Perceived Benefits	Pretest Posttest I Posttest II	11.42 (2.081) 11.98 (1.332) 12.16 (.912)	14.893	1.658	8.983	3.740	.056	N.S	.071
Perceived Barriers	Pretest Posttest I Posttest II	22.90 (4.983) 23.86 (3.812) 22.90 (4.983)	30.720	1.000	30.720	5.064	.069	N.S	.094
Cues to action	Pretest Posttest I Posttest II	23.04 (2.878 24.86 (2.030) 24.64 (2.841)	98.680	1.183	83.411	8.889	.063	N.S	.154
Self-efficacy	Pretest Posttest I Posttest II	16.48 (3.412) 17.08 (3.331) 17.54 (2.786)	28.253	1.396	20.236	3.314	.059	N.S	.063

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value, Sig: Significance, N.S: Not Significant

Table (4).indicated the HBM significantly improved workers' behaviors regarding the use of PPE in the study group. The overall scores for health beliefs model components increased significantly from pretest (M = 121.80, SD = 9.723) to posttest I (M = 157.56, SD = 6.181) and posttest II (M = 164.86, SD = 7.335), with a highly significant effect observed (F= 822.193, p = .000, Partial Eta Squared = .944). This indicates a strong and significant impact of the intervention on enhancing workers' behaviors related to PPE use. While in table (5) Exhibits that in the control group, there were no significant changes in overall

health beliefs regarding the use of personal protective equipment over time. The mean scores remained relatively stable across pretest (M = 124.50, SD = 11.956), posttest I (M = 126.64, SD = 7.984), and posttest II (M = 126.70, SD = 13.151), with non-significant differences observed (F= .773, p = .465, Partial Eta Squared = .016). This indicates that, without the intervention, there were no meaningful improvements in health beliefs among workers. our result is agree with result of Rezaee [19] their found there was a significant difference between the mean attitude scores before and after two months of training in the experimental group (P<0.001). However, the mean construct scores in the control group showed no significant difference in the two measures. Studies on predictors of PPE use have indicated that attitude and awareness play a crucial role in the continued use of PPE.

Table (4): Efficacy of Overall Health Beliefs Model on Workers' Behaviors about Using Personal Protective Equipment in the Study Group (N=50)

Descriptive		**Within-Subjects Effect**								
HBM	**Mean (S.D)**	**Source**		**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**P-value**	**Sig.**	**Partial Eta Squared**
Pretest **Posttest I** **Posttest II**	121.80 (9.723) 157.56 (6.181) 164.86 (7.335)	**Time**	Sphericity Assumed	53103.853	2	26551.927	822.193	.000	H.S	.944
			Greenhouse-Geisser	**53103.853**	**1.884**	**28184.212**	**822.193**	**.000**	**H.S**	**.944**
			Huynh-Feldt	53103.853	1.957	27134.503	822.193	.000	H.S	.944
			Lower-bound	53103.853	1.000	53103.853	822.193	.000	H.S	.944
		Error(Time)	Sphericity Assumed	3164.813	98	32.294				
			Greenhouse-Geisser	3164.813	92.324	34.279				
			Huynh-Feldt	3164.813	95.896	33.003				
			Lower-bound	3164.813	49.000	64.588				

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value, Sig: Significance, H.S: High Significant

Table (5): Significant Differences in Overall Health Belief Models among Workers in the Control Group (N=50)

Descriptive		**Within-Subjects Effect**								
HBM	**Mean (S.D)**	**Source**		**Type III Sum of Squares**	**df**	**Mean Square**	**F**	**P-value**	**Sig.**	**Partial Eta Squared**
Pretest **Posttest I** **Posttest II**	124.50 (11.956) 126.64 (7.984) 126.70 (13.151)	**Time**	Sphericity Assumed	157.053	2	78.527	.773	.465	N.S	.016
			Greenhouse-Geisser	157.053	1.780	88.212	.773	.451	N.S	.016
			Huynh-Feldt	157.053	1.843	85.221	.773	.455	N.S	.016
			Lower-bound	157.053	1.000	157.053	.773	.384	N.S	.016
		Error(Time)	Sphericity Assumed	9960.947	98	101.642				
			Greenhouse-Geisser	9960.947	87.240	114.178				

			Huynh-Feldt	9960.947	90.302	110.307				
			Lower-bound	9960.947	49.000	203.285				

S.D: Standard Deviation, df: Degree of Freedom, f: F-statistics, P-value: probability value, Sig: Significance, N.S: Not Significa

5. CONCLUSION

Applying health belief model, demonstrates the importance of PPE use in prevention of occupational hazard or accident in workplace and has a positive impact on workers' behaviors of all HBM concept.

6. RECOMMENDATION

The study recommends the need to repeated future studies based on HBM on large number of workers in the industrial or manufactory in Iraqi, with the goal of enhancing workers' behavior toward PPE using.

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