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A STUDY TO ASSESS THE EFFECTIVENESS OF STP ON KNOWLEDGE REGARDING PREVENTION OF OCCUPATIONAL HEALTH HAZARD AMONG CONSTRUCTION WORKERS AT GNSU ROHTAS, BIHAR

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ABSTRACT

Background:

The construction site has a poor safety record. It has a high accident rate. Building construction is a high–risk industry. The accident rate is very high when compared to other industries.

Methodology:

It is a quasi-experimental one group pre-test and posttest research design. The study was conducted among 60 samples selected by non-probability convenient sampling. Permission was taken from Institute Ethical Committee, NMCH The researcher met the subjects, explained about the purpose of the research, and assured confidentially and anonymity and consent were obtained from the subjects. The researcher adopted quasi-experimental research design. The demographic variables were collected by using structured questionnaire during pre-test of the construction workers. Pre-test was measured by close-ended questionnaire, which had 21 questions for 15 minutes. Then the subjects received the Structured Teaching Programme regarding prevention of occupational health hazard among construction workers for 30 min.

Post-test was done after 3 days by researcher to assess the effectiveness of Structured Teaching Programme on knowledge regarding prevention of occupational health hazard among construction workers.

Results:

Major findings of the study

- 10(17%) of them belong to 18-24 years,
- 17 (28.33) of them belong to 25-31 years.
- 15 (25%) of them belong to 32-38 years.
- 18 (30%) of them belong to 39-45 years.

Conclusion:

The finding of the study it is concluded that the pre- test and post- test knowledge scores shows that the majority of construction workers had poor knowledge score (60%) in pre –test while in the post test the construction workers had average knowledge score (50%). The pre-test mean is 13.05 and post-test mean is 16.075.

Construction workers in relation to their age group indicated 10(17%) of them belong to 18-24 years of age, 17(28.33) of them belong to 25-31 years, 15(25%) of them belong to 32-38 years of age, 18(30%) of them belong to 39-45 years of age.

The study proved that there was no significant association between the level of knowledge and selected demographic variables such as age, gender, religion, family income per month, education, personal habits, place of residence, but there is difference between pre-test knowledge and post-test knowledge score. Hence the hypothesis is accepted.

Thus, the investigator concluded that 36(60%) of the construction workers were not known about prevention of occupational health hazards in pre-test. While in post-test 51(85%) were well known about the prevention of occupational health hazard at construction site. Only 9(15%) of the construction workers had poor knowledge score (1-7) after the administration of structured teaching programme.

So, the investigator develops a lesson plan on prevention of occupational health hazard in order to increase their knowledge.

Keywords: Construction workers, knowledge, occupational health hazard, prevention.

Abbreviation List

>:- Greater than

<:- Lesser than

*:- Significant

%:- Percentage

r: - co-relational coefficient

R: - Reliability

df: - degree of freedom

X_2: - Chi- square

p value: - probability value

INTRODUCTION

"SAFETY ISN'T EXPENSIVE, IT'S PRICELESS"

ANON

Occupational health deals with all aspects of health and safety in workplace and has a strong focus on primary prevention of hazards.

WHO

Work plays a central role in people's lives since most workers spend at least 8 hours a day in the work place – whether it is on a construction site, in an office or factory.

Occupational health is concerned with health in its relation to work and the working environment. Occupational health implies not only health protection but also health promotion, emergency care, wide range of preventive, curative services, rehabilitative services, a concept which includes everything that can apply to promote the health and working capacity of worker[1].

Occupational health nursing is concerned with the nursing component of comprehensive occupational health care and contributes health promotion, protection of the health of disabled

workers. The nurses dealing with occupational health can play a major role in promotion, protection, prevention and control of diseases and disabilities[2].

Workers constitute a large and important sector of the world's population. The global labour force is about 2600 million with 75% of these working people in developing countries. The total labour force in India is estimated to be 317 million in which the organized sector employees only 26.8 Million (8.5%) while the unorganized sector employs, as many as 290.2 Million (91.5%)[3]. Indian industry remains labour intensive and often employs relatively inexpensive and hazardous technology due to financial constraints and is especially true for unorganized small-scale sectors[4].

The "workers" in this particular field of job is exposed to some risks inherent in the works and posed safety hazards. Appropriate measures and steps need to be put in place adequately in order to control the occurrence of various accidents on site so that it can be reduced to the barest minimum and if it cannot be totally eliminated at all. The lives of the craftsmen, skilled workers, personnel and professionals must be properly protected against injuries or any other related harms while on the site work[5].

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Akinola (2006) said, the existence of building structures is a necessity in every society.

The International Labour Organisation (ILO) and the World define occupational health

Health Organisation (WHO) as "the promotion and maintenance of the highest degree of the physical mental and social well-being of workers in all occupation" (Kohl and Jeyaratnam, 2001, Gribb et al., 1999). According to Gribb et al., 1999, less effort is directed towards health matters in the industry[6].

The construction industry, is a labour intensive, generates demand for skilled and semiskilled labour force. The employment in construction sector is expected to touch 40 million by the year 2007, this work force shall comprise 55% of the unskilled, 27% skilled labour and rest the technical and support staff. Though India has a human resource, it requires training in various skills for absorption in the construction industry the construction work is considered as hard physical labour, often under difficult conditions including hot, cold or wether[7].

Construction workers drawn largely from immigrants and members of other low- income groups face predictable occupational illness and injuries Construction workers suffer far more injuries that are serious and fatalities than the general workforce population. They die from work-related trauma at a rate three times the national average for workers in all industrial sectors; they suffer disproportionately from nonfatal injuries, from lung diseases, musculoskeletal disorders, hearing loss and dermatologic conditions. For the construction industry, the national cost from lost production, medical care, workers compensation and related claims is very high[8]. Workers compensation insurance premiums alone cost $ 7 billion annually they often work in the presence

of excessive noise levels and with tools and equipment that produce potentially hazardous vibrations; perform repetitive, forceful motions and assume awkward working postures; frequently use a variety of toxic and volatile substances; and must cope with complications of frequently changing work sites with several employers work crews engaged in separate concurrent activities, while being self-supervised during much of the day[9].

Building construction is badly needed for the development and industrial growth of a country. In India about 170 million workers are associated with construction industries. But most of them are unorganized and migratory in nature. They travel from one city to another for searching a job. Hence the relationship between employer and employee are casual. They are not enjoyed or aware about different security scheme[10].

Many scientists and researchers have reported about different occupational health hazards among construction workers. Due to very low cost of manpower in developing countries, manual handling of different objects are seen almost every construction site which caused most of the industrial injuries[11].

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Material and Methods

This study is to assess the effectiveness of STP on knowledge regarding prevention of occupational health hazard among construction workers.

Research approach

Quantitative Approach

Research design

A Quasi-experimental design used for this study.

Setting of the study

The study was conducted at construction sites of Gopal Narayan Singh University, Jamuhar rohtas Bihar.

Population

Target population

The target population of the study included construction workers knowledge to have occupational health hazards who are working at construction sites.

Accessible population

The accessible populations are construction workers present during data collection.

Sample

Sample consisted of 60 construction workers.

Sampling technique

Non-probability convenient sampling technique is used to select the study subjects. All workers who fulfilled the inclusion and exclusion criteria were selected for the study. All 60 workers fulfilled the criteria of the study.

Criteria for sample selection

INCLUSION CRITERIA

- Age group of construction workers must be in between 18-45 years.
- Construction workers participating in the study.
- Subject must be willing to participate in the study.

EXCLUSION CRITERIA

- Not willing to participate.
- Construction workers of age group of less than 18 years and more than 45 years are not included in this study.

Variable

INDEPENDENT VARIABLES

In this study independent variables are structured teaching programme regarding prevention of occupational health hazard.

DEMOGRAPHIC VARIABLES

In this study demographic variables are age, gender, religion, family income per month, education, personal habits, place of residence.

Instruments

DESCRIPTION OF TOOL

The tool consists of two parts, one part is based on demographic variable and second part is a self-structured questionnaire. Demographic Performa consists of various demographic variables of construction workers such as- Age, Gender, Religion, Family income per month, Education, Personal habits, Place of residence.

SELF-STRUCTURRED QUESTIONNAIRE

Structured questionnaire was used to assess the knowledge regarding prevention of occupational health hazard among construction workers. It consists of 21 close-ended questions. The scoring is designed as follows with structure questionnaire.

There are total 21 items, each correct answer will be given one marks, and wrong answer will be given zero marks.

- Each question carry = 1
- Maximum marks = 21
- Minimum marks = 0

Scoring; - there will be 21 items. Each item has 2 options.

Overall marks; - The maximum marks are 21 to interpret the knowledge the score is classified as;

- Good knowledge
- Average knowledge
- Poor knowledge

Good Knowledge	**15-21**
Average Knowledge	**8-14**
Poor Knowledge	**1-7**

VALIDITY OF TOOL

Validity refers to the degree to which an instrument measures what it is supposed to be measuring. **(Polit and Hungler)**

The tool was submitted to Three experts, comprising of one associate professor (dept. of Medicine), one associate professor (dept. of general medicine), one Cardiologist. Experts gave their suggestion and options about the content of tool. Modification such as grammatical mistakes in demographic variables.

RELIABILITY OF TOOL

Reliability is the degree of consistency and accuracy with which an instrument measures the attribute for which it is designed to measures. **(Suresh K. Sharma 2021)**

Reliability of the tool was checked by the Karl Pearson's formula and the co-relational coefficient r=0.83. Hence, the tool was found to be highly reliable.

ETHICAL CONSIDERATION

To conduct research study at construction site of GNSU, a written permission was obtained from the construction in charge of that construction site before starting the study. A written consent was taken from the construction workers. Anonymity and confidentiality of the information was maintained.

PILOT STUDY

The investigator conducted the pilot study from 25/12/21 to 28/12/21 at construction site of GNSU, jamuhar, rohtas and 6 construction workers who fulfil the inclusion criteria were selected using convenient non probability sampling technique. In Quasi, experimental one group pre-test and post-test research design was adopted in this study. After getting the consent, the pre-test was conducted by using structured knowledge questions to assess the knowledge. Name of the sample were collected to identify the same sample for the posttest. STP was given on the day of pre-test. After 3 days, posttest was conducted by using the same questionnaire for evaluating the effectiveness of STP. The effectiveness of STP was assessed based on their written answer of the knowledge questionnaire.

The major findings of the study revealed that out of 6 construction workers 2 had good knowledge 2 had average knowledge and 2 had poor knowledge in pre- test. While after providing STP, 4 construction workers had good knowledge and 2 had average knowledge.

Data Analysis

Data analysis was planned on the basis of objectives and hypothesis of the study. The data obtained was analyzed by descriptive and inferential statistics. The plan of data analysis was as follow:

Part – A: Demographic variables of construction workers will be analysed by using frequency and percentage distribution.

Part – B: Comparison of pre-test and post-test knowledge score of regarding prevention of occupational health hazard at construction site by test significance showing effectiveness of Structured Teaching Programme.

Part – C: Assessment of subject wise knowledge score and percentage among construction workers on prevention of occupational health hazard.

Result/ Discussion

This chapter discusses the findings of the study derived from the statistical analysis and its pertinence to the objective set for the study and related review of literature of the study.

Objective of the study

1) To assess the pre-test knowledge of construction workers regarding prevention of occupational health hazards.
2) To assess the post-test knowledge of construction workers regarding prevention of occupational health hazards.
3) To find out the effectiveness of structured teaching programme by confirming the pre-test post-test knowledge on occupational health hazard among construction workers.

4) To determine the association between the pre-test knowledge of construction workers on occupational health hazards with selected demographic variables.

Description of the study population

Construction workers in relation to their age group indicated 10(17%) of them belong to 18-24 years of age, 17(28.33) of them belong to 25-31 years, 15(25%) of them belong to 32-38 years of age, 18(30%) of them belong to 39-45 years of age.

Conclusion

This chapter presents the summary, conclusions, implications and recommendations for further research.

Summary of the Study

The purpose of this study was to assess the effectiveness of STP on knowledge regarding prevention of occupational health hazard among construction workers. A quasi experimental design was used for the present study.

The conceptual framework used for the study was based on Betty Newmans System Model. The data regarding socio demographic and background Performa are collected and written records. Knowledge was assessed by self structured questionnaire.

The setting of the study included construction site of GNSU. Non-probability convenient sampling technique was used to select the study participant. The sample consisted of 60 construction workers working at the construction site of GNSU. The data analysis was performed by using both descriptive (frequency and percentage), and inferential statistics (chi-square test.

Study findings are summarized below:

The majority of construction workers had poor knowledge score (60%) in pre –test while in the post test the construction workers had average knowledge score (50%). The pre-test mean is 13.05 and post-test mean is 16.075.

36 (60%) of the construction workers were not known about prevention of occupational health hazards in pre-test. While in post-test 51 (85%) were well known about the prevention of occupational health hazard at construction site. Only 9(15%) of the construction workers had poor knowledge score (1-7) after the administration of structured teaching programme.

So, the investigator develops a lesson plan on prevention of occupational health hazard in order to increase their knowledge.

Conclusion

The study proved that there was no significant association between the level of knowledge and selected demographic variables such as age, gender, religion, family income per month, education, personal habits, place of residence, but there is difference between pre-test knowledge and post-test knowledge score.

Implications for Nursing

Nursing Education

- Nursing curriculum equip the students with the essential and update knowledge, skills & professional attitude/etiquettes so that they are able to assume their duties and responsibility once they become fully fledged professional nurses.
- Nursing curriculum is mainly theory based and little focused in the practices there is always a gap existing in between theory practice.

Nursing practice

- Nursing personnel have to plan and provide knowledge regarding prevention of occupational health hazards.
- Nursing personnel can provide information regarding benefits of personal protective equipment (PPE). This will serve an excellent from in increase knowledge.
- Knowledge can be providing in selected construction sites by using lesson plan regarding prevention of occupational health hazards.

Nursing administration

- Arranging knowledge material according to the construction workers wise adequately at GNSU of Rohtas Bihar.
- It is important for the nurse administration to facilitate assessment program to improve the knowledge of construction workers regarding prevention of occupational health hazards.

Nursing research

- More researches can be done on longitudinal research study basis and taking more samples so that generalize ability of finding is possible. Large-scale studies can be conducted.
- Research should be continued on need of the practices and provide a lesson plan to provide adequate knowledge.

Recommendations for further research

- For the generalization of the study results, a similar study can be replicated with the larger sample.
- A comparative study can be conducted at different occupational sites.
- A similar study can be conducted in nurses working in hospitals.
- A study can be conducted in assessing the knowledge and skill of staff nurses, workers, and labour at different different settings.
- A study can be conducted to assess knowledge of workers regarding occupational health hazard and its impact on their health.

`S.no	Characteristics	Frequency	Percentage
1	**Age**		
	18-24	10	17%
	25-31	17	28.33%
	32-38	15	25.00%
	39-45	18	30.00%
2	**Gender**		
	Male	49	82%
	Female	11	18%
3	**Religion**		
	Hindu	48	80%
	Christian	0	
	Muslim	12	20%
	Buddhism	0	
4	**Family income per month**		

	3000-5000	3	5%
	5001-7000	9	15%
	7001-9000	20	33%
	9001-11,000	28	47%
5	**Education**		
	1-5th	21	35%
	6-10th	18	30%
	11-12th	11	18%
	Illiterate	10	17%
6	**Personal habits**		
	Smoking	9	15%
	Alcoholism	12	20%
	Tobacco chewing	14	23%
	No such habits	25	42%
7	**Place of residence**		
	Rural	10	17%
	Urban	50	83%

TABLE 1: 1 Frequency and percentage distribution of studied samples according to socio demographic variables.

Percentage wise distribution of construction workers in relation to their age group indicated 10(17%) of them belong to 18-24 years of age, 17(28.33) of them belong to 25-31 years, 15(25%) of them belong to 32-38 years of age, 18(30%) of them belong to 39-45 years of age.

Percentage wise distribution of construction workers in relation to their gender age depicts majority of them were male 49(82%) and 11(18%) of them were female.

Percentage wise distribution of construction workers in relation to their religion represents that 48(20%) of them were Hindu and 12(20%) of them were Muslim.

Percentage wise distribution of construction workers in relation to their family income per month depicts that 3(5%) were of them having 3000-5000 family income per month, 9(15%) of them were having 5001-7000 family income, 20(33%) of them were having family income of 70019000 and 28(47%) of the construction workers were having family income of 9001-11000.

Percentage wise distribution of construction workers in relation to their education it is observed that 21(35%) construction workers from 1-5th class, 18(30%) of them were 6-10th, 11(18%) of them were 11-12th and 10(17%) of them were illiterate.

Percentage wise distribution of construction workers in relation to their personal habits represents that 9(15%) of the construction workers were having habit of smoking, 12(20%) of them were habit of alcoholism, 14(23%) of them were having habits of tobacco chewing and 25(42%) of them were having no such kind of habits.

Percentage wise distribution of construction workers in relation to their place of residence it is observed that majority of them were from 50(83%) urban area and 10(17%) of them were from rural area.

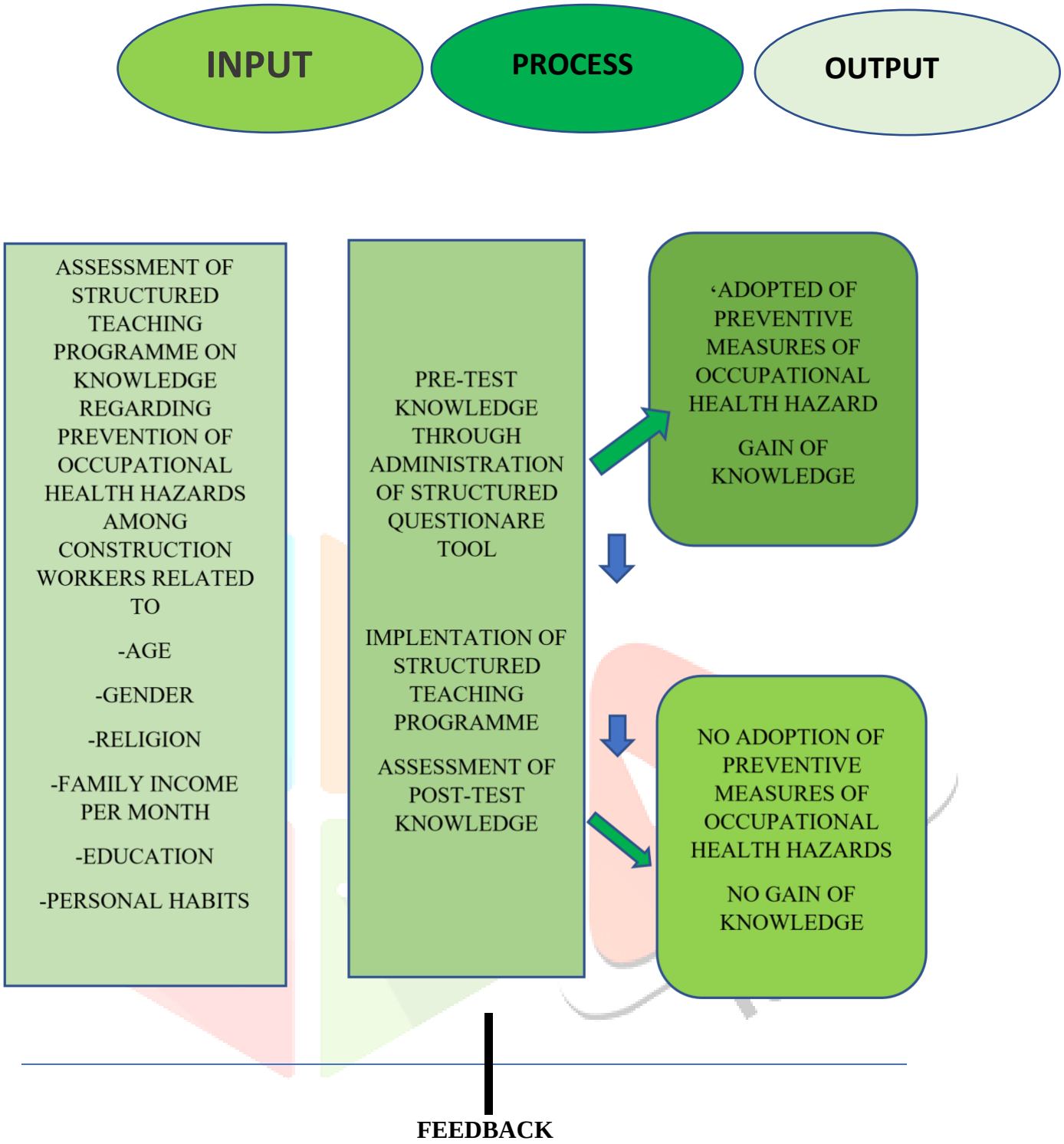


Fig: - 1 Conceptual framework based on system model

DIAGRAMETIC REPRESENTATION OF CONCEPTUAL FRAMEWORK

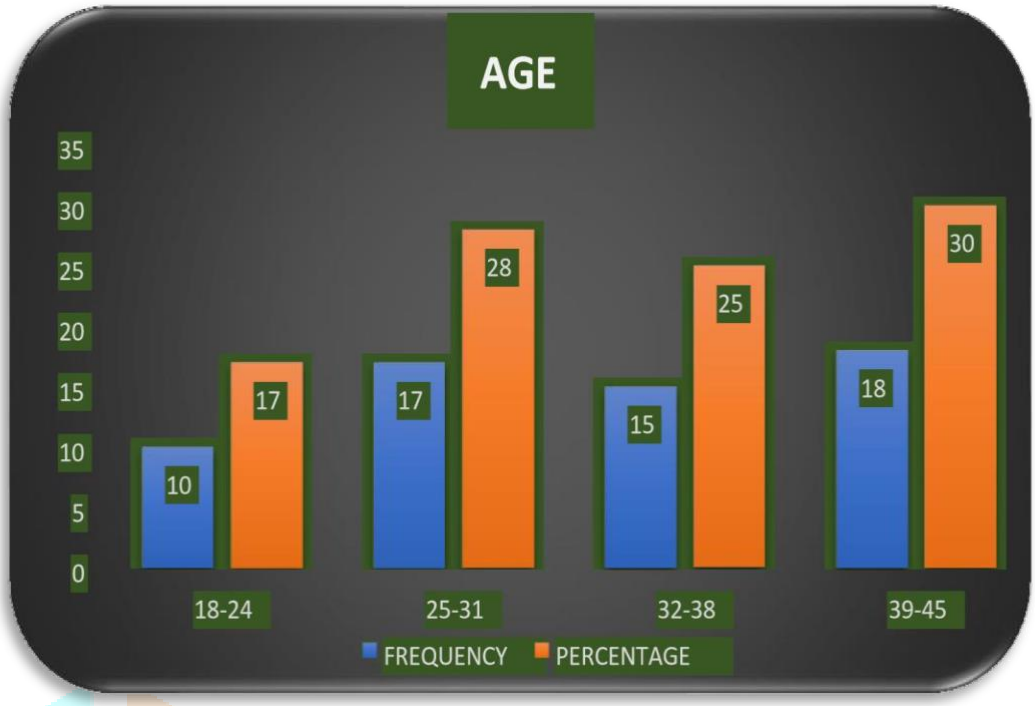


Fig 3.1 Frequency and % distribution of samples according to age.

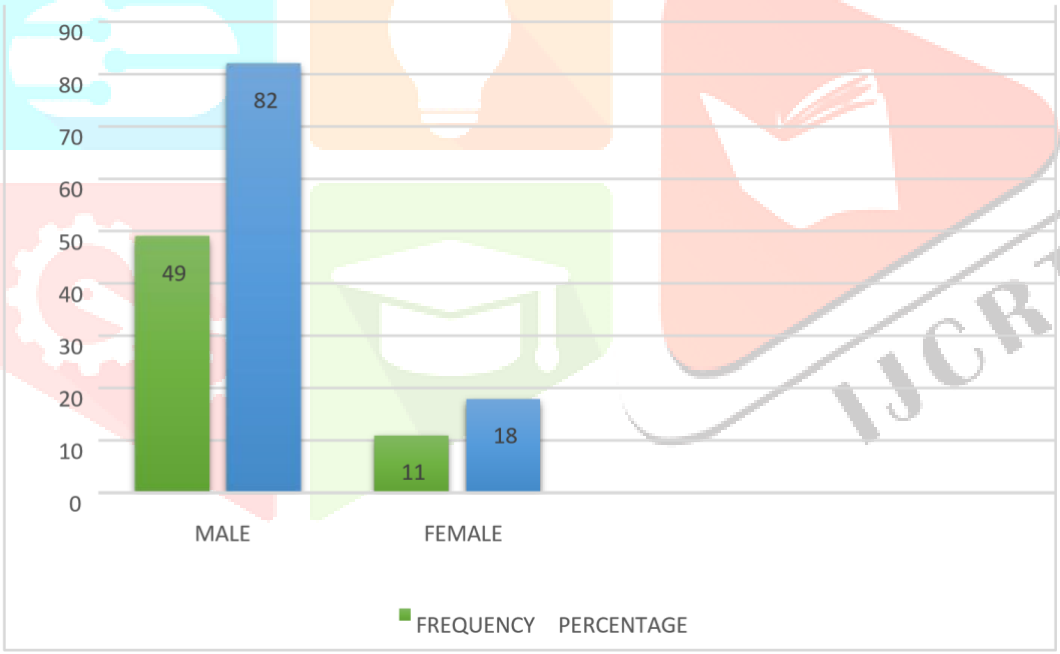


Fig: 3.2 Frequency and % wise distribution of samples according to gender

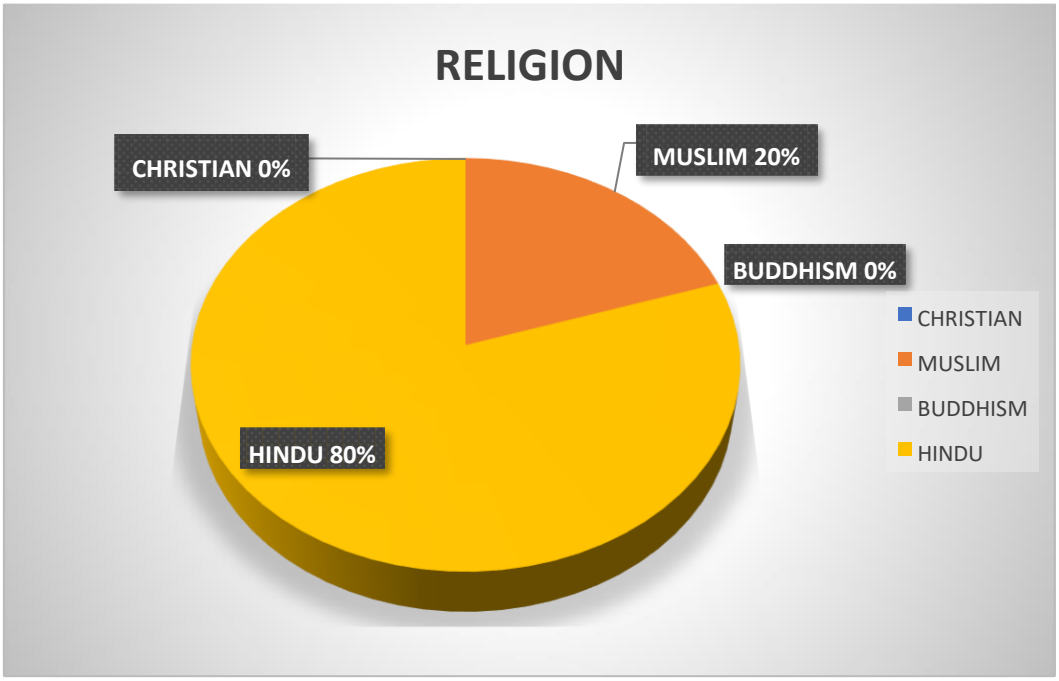


Fig: 3.3 Frequency and % wise distribution of samples according to religion

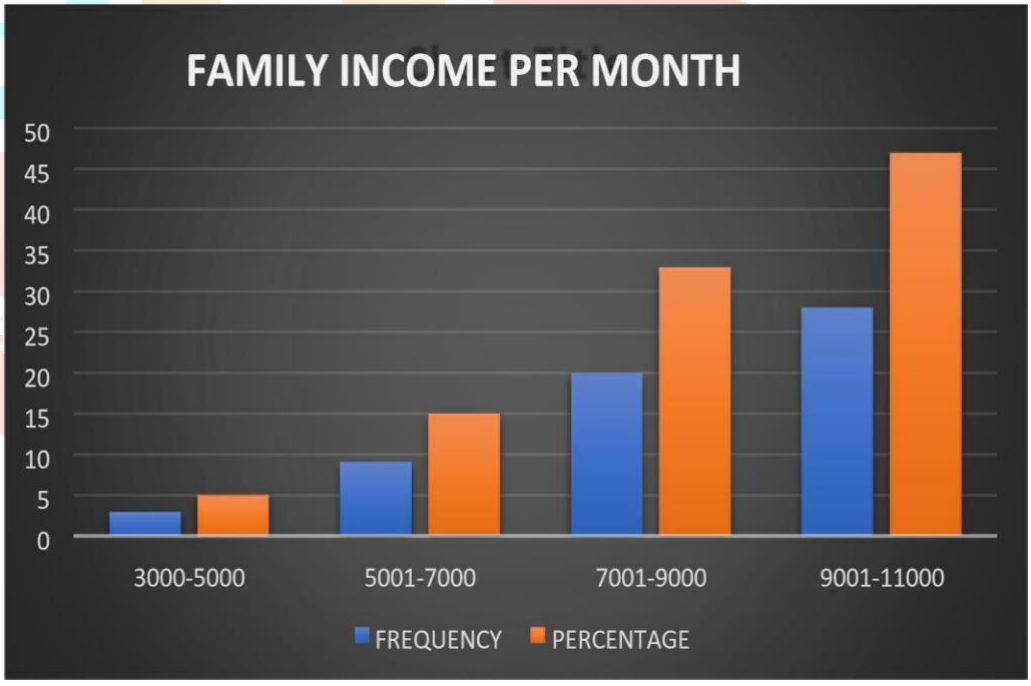


Fig: 3.4 Frequency and % wise distribution of sample according to family income per month

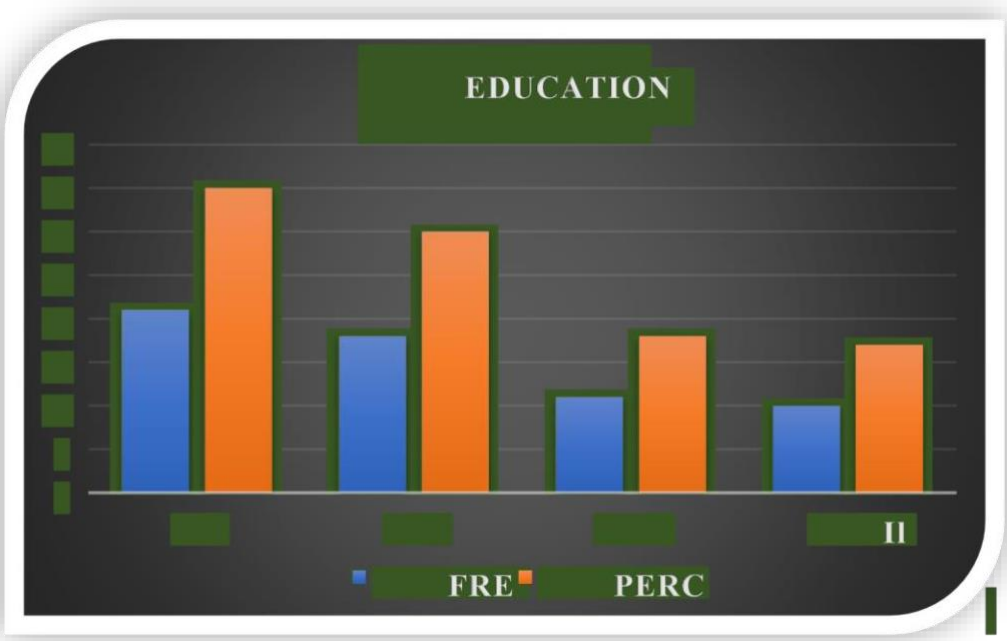


Fig 3.5 Frequency and % wise distribution of samples according to education

Fig: 3.6 Frequency and % wise distribution of samples according to personal habits

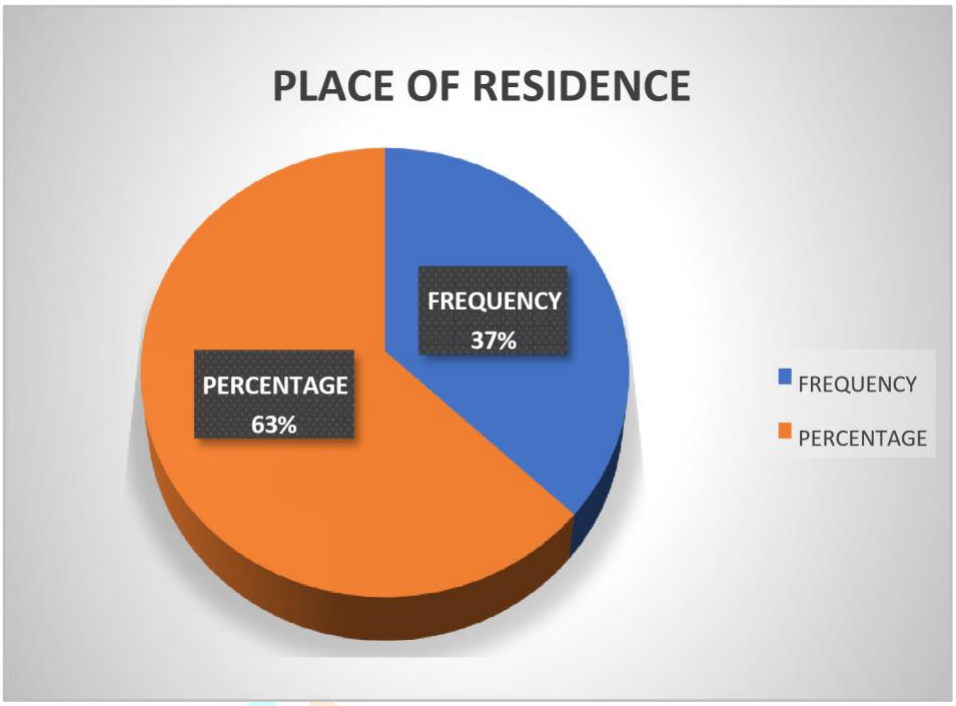


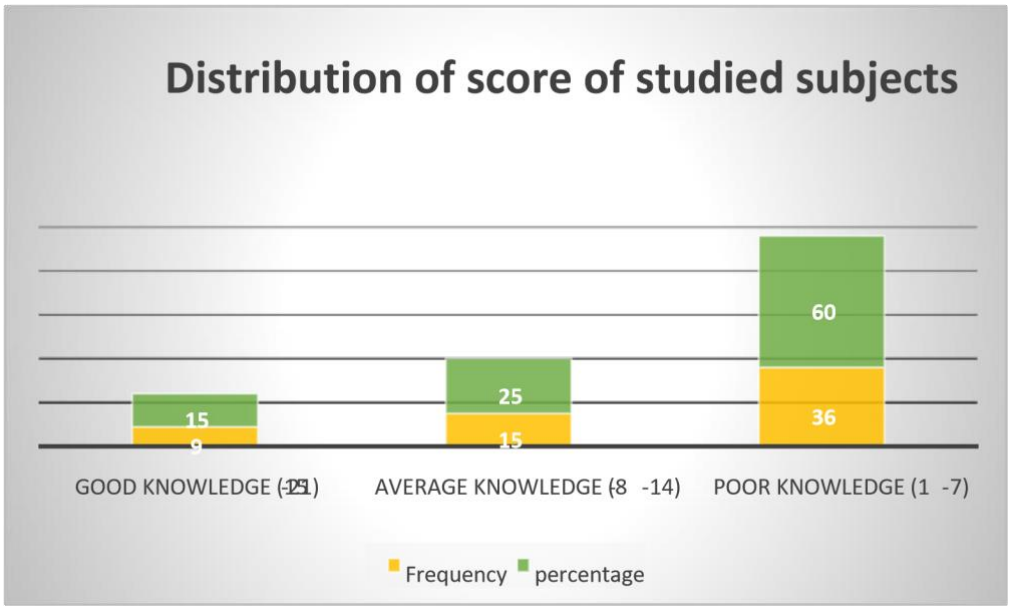
Fig: 3.7 Frequency and % wise distribution of samples according to place of residence

Comparison between test score and knowledge score among construction workers in construction site of GNSU.

Frequency & percentage distribution of pre-test score of studied subjects-

Knowledge & test score	Frequency (60)	Percentage %
Good knowledge (15-21)	9	15%
Average knowledge (8-14)	15	25%
Poor knowledge (1-7)	36	60%
Total	60	100%

concerned with the information on mark obtained in test by studied subject knowledge regarding prevention of occupational health hazard among construction workers at construction site of GNSU. It is observed that most of the construction workers 36(60%) were in poor (1-7) category which are aware, while some 15(25%) construction workers were in average (15) category and 9(15%) construction workers were in good (15-21) category were aware about knowledge regarding prevention of occupational health hazard among construction workers at GNSU.



Frequency & percentage distribution of pre-test score of studied subjects

(Post-Test)

Frequency and % distribution of Post test score of studied subject-

Knowledge & test score	Frequency (60)	Percentage %
Good knowledge (15-21)	21	35%
Average knowledge (8-14)	30	50%
Poor knowledge (1-7)	9	15%
Total	60	100%

concerned with the information on marks obtained in test by studied subject knowledge regarding occupational health hazards among construction workers at GNSU, Jamuhar. It is observed that most of workers 30(50%) were in Average (8-14) category which are aware, while some 9(15%) workers were in poor (1-7) category and 21(35%) workers in good (15-21) category aware about knowledge regarding occupational health hazards among construction workers at GNSU.

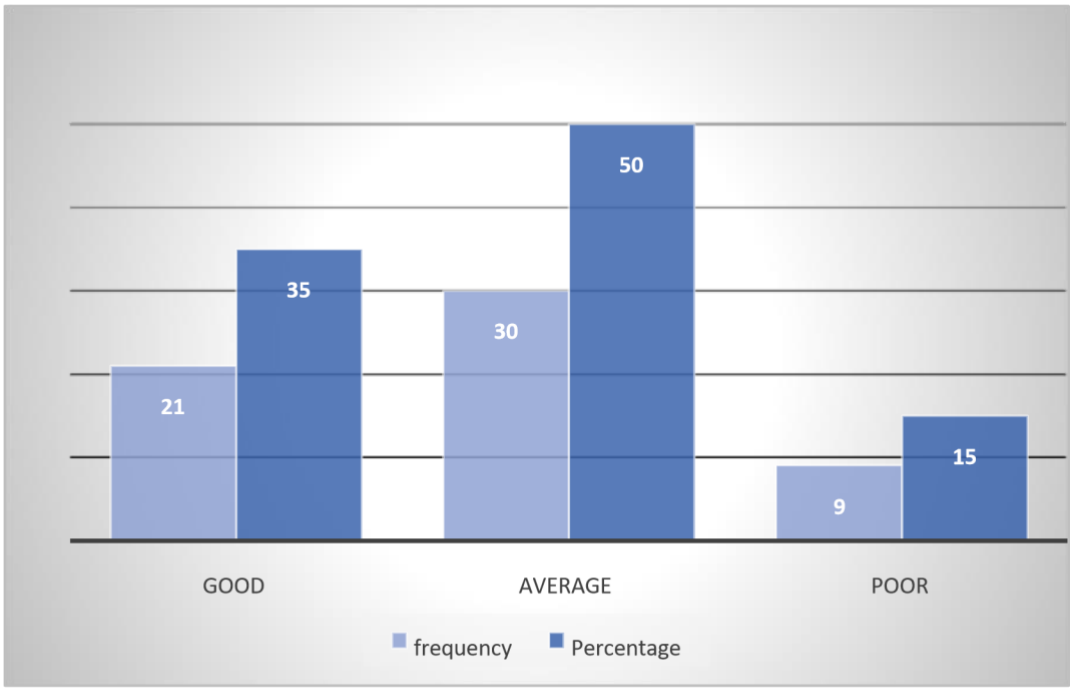
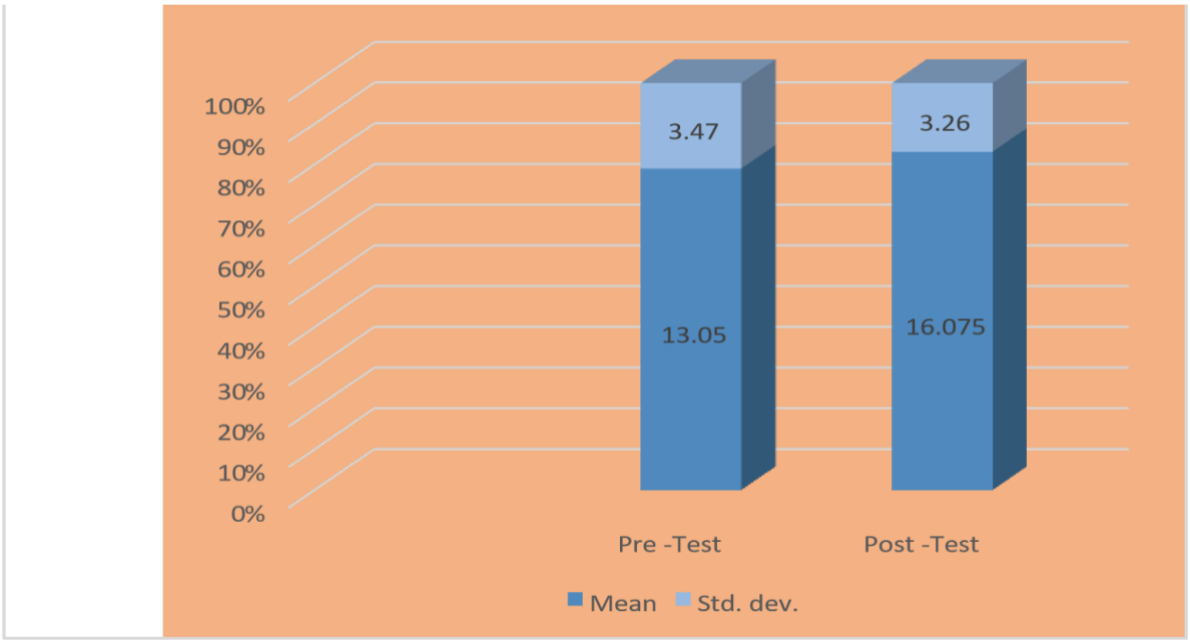


Fig: 4.2 Frequency and % distribution of score of studied subjects.

Mean and standard deviation of knowledge scores (Comparison of pre-test and post-test knowledge score)

Knowledge test	**Mean**	**Std. dev.**	**Mean difference**	**t-value**
Pre -Test	13.05	3.47	**3.020**	**4.913**
Post -Test	16.075	3.26		

Learning in Mean and S.D of pre-test score was **13.05** + -3**.47** and mean and SD of post test score was **16.075** + -**3.26** in information with respect to word related prevention of occupational health hazards among construction workers in a choose construction site at GNSU. Subsequently it is affirmed from the table of segment 3 that there is a critical distension in mean of test score which somewhat satisfy the second-third destination of the present investigation. Table demonstrate that mean contrast in the middle pre-test and post-test was **3.02**.**'t'** esteem (**t**= **4**.**193**) at the significant level **p** < **0**.**0001** demonstrate that there was critical distinction, it shows that there is a huge increment in learning of word related prevention of occupational health hazards among construction workers in a chose construction site of GNSU.



Mean and standard deviation of knowledge scores

ASSOCIATION BETWEEN THE SELECTED DEMOGRAPHIC VARIABLES.

The association of level score regarding prevention of occupational health hazard among construction workers at GNSU Rohtas Bihar with selected demographic variable is summarized below.

S.no	Characteristics	Frequency	Percentage	X^2 , DF, P
1	**Age**			
	18-24	10	17%	X^2=2.533, DF= 3
	25-31	17	28.33%	P=0.46
	32-38	15	25.00%	
	39-45	18	30.00%	
2	**Gender**			
	Male	49	82%	X^2=24.06, DF=1,
	Female	11	18%	P=9.305
3	**Religion**			

	Hindu	48	80%	X^2=21.6, DF=1
	Christian	0		P=0.000-
	Muslim	12	20%	
	Buddhism	0		
4	**Family income per month**			
	3000-5000	3	5%	X^2=24.93, DF=3
	5001-7000	9	15%	P=0.0000
	7001-9000	20	33%	
	9001-11,000	28	47%	
5	**Education**			
	1-5th	21	35%	X^2=5.733, DF=3
	6-10th	18	30%	P=0.125
	11-12th	11	18%	
	Illiterate	10	17%	
6	**Personal habits**			
	Smoking	9	15%	X^2=9.73, DF=3
	Alcoholism	12	20%	P=0.02
	Tobacco chewing	14	23%	
	No such habits	25	42%	
7	**Place of residence**			
	Rural	10	17%	X^2=26.66, DF=1
	Urban	50	83%	P=2.417

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