



TO INVESTIGATE THE EXECUTION OF HEALTH AND SAFETY MEASURES IN COMMUNICATION AND WORKS DEPARTMENT HIGHWAYS SWAT, KHYBER PAKHTUNKHWA KP, PAKISTAN

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ABSTRACT

It is well known that the highway plays an important role in the development of infrastructure of the country, the construction industry of highway is quite essential for Gross Domestic Growth (GDP) and also creating opportunities various jobs. The important goals of the country also depend on the highway. It also effects the social and economic development of the country. The construction industry is a big industry in the world in which the health and safety issues are occur means that it is very hazardous. The risk also associated with the construction industry. We know that the human behaviour is naturally associated that work done should be fast but it creates unsafe work zone which lead accidents. To change that behaviour, we should make the workplace safe by recognizing the hazards, safety procedures and standards, responsibilities, safety training and demos, rules for inspection and regulations. There is a mechanized and fast growth in highway construction projects. But the lack of implementation of these safety procedures due to policies from the authorities and government of Pakistan. So this research is basically to identify and investigate the safety procedures and standards, rules and regulations, worker behaviour, responsibilities, safety trainings and demos, rules for inspection and environmental safety of Communication and Works (C&W) Highways department Swat, Pakhtunkhwa (KP) Pakistan. So for that we discovered the Questionnaires survey because most of the employees have the awareness of workplace risks, safety techniques, safety implementation, safety management, procedures of safety while some employees required the enhancement of safety procedures and standards of C&W Highways Swat, KP Pakistan.

Keywords: Construction safety, highway safety, health and safety standards, safety trainings, safety procedures, C&W Swat, KP Pakistan.

Introduction

The construction industry is very important and like a backbone for every country to make it developed. The construction industry plays a big role in the economic growth of a country. The highway construction plays the essential role for economic growth and social benefits. The highways and roads also provide the basic things like job opportunities, transport facilities, health and education facilities to make the distance minimize and make a safe environment for the journey to get the particular destination. The highway construction also makes the time interval less to develop an area. So that's why the highway construction is very essential [1]. The construction industry is big but due to the lack of health and safety procedures and regulation, and unawareness, it makes the industry more hazardous and threatening. Mostly the work zone of highway site is very threatening places over worldwide. It is also quite clear and well know that unsafe work zone is very prone to accidents. The accidents mostly occur due to lack of risk management, worker's behaviour and regulation. Some of the procedures are outdated for construction operations [2].

Safety in highway construction is an essential problem. Health and safety have an impact on time cost and quality of any type of project in the industry. According to [3] a good job can do only by an experienced worker compared to unexperienced, a fresh worker require more time to do the good job with good quality. There are many developed countries which provide safety trainings and also follow maximum safety procedures and standards to minimize the accidents and make the work zone safe for the employees and workers. Skilled workers play a vital role for the quality work operations, minimize injuries and fatalities also minimize the compensation cost.

In Pakistan most of the workers do not follow any protective measures, so therefore more accidents occur and also more projects are suffering from more fatalities and injuries, as the health and safety regulation and awareness are not followed during highway construction.

Literature Review

This research is about to investigate the execution of health and safety measures in Communication and Works department highway Swat, KP Pakistan. The main focus of literature review is about to explore the health and safety performance level, same as the proactive activities to secure injuries, safety training and demos, health and safety regulations, supervision of workplace during working, the employees responsibilities about health and safety, environment friendly safe techniques for workers and employees, also for public during construction to discover the safe work zone during construction of C&W Highways Department Swat, KP Pakistan.

These activities should be done by the whole project team to make the workplaces safe from hazards and risks during working. Proactive activities are scheduled activities to protect injuries and fatalities and also the potential hazards. However, providing full detail and safety built design is the role of designer during design phase, but [4] mentioned that Design-For-Safety-Process (DFSP), an effective methodology is being used to developed safe environment for employees by figured out safety hazards takeover from construction component and activities.

According to the Centre for Construction Research and Training (2008), from the last 4 decades, injuries and fatalities rates have been reduced remarkably, as matter of fact, the rate of fatalities and injuries in the construction industry, is three times higher than other industries. Between 1992 and 1998, the Census of Fatal Occupational Injuries (CFOI) report declared that 841 worker's fatalities occur in highways (Bureau of Labor Statistics data). These fatalities mostly occur in work zone due to vehicle and machinery accidents [5]. Total number of 841 fatalities in which 492 are work zone fatalities. The 42% are laborer, 9% are truck drivers, 8% are supervisors and 8% are engineers. While 465 fatalities are vehicle and machinery within work zone. In this event, 154 fatalities are due to a worker struck by a vehicle while 152 fatalities are by passing vehicles. According to New York State Department of Transportation (NYSDOT) construction report, from 1990 to 2001 the total construction work area accidents are 2161, in which the fetal are 22, hospital level are 332, minor are 1140 and unknown are 667. Same from 1990 to 2001 the traffic accidents are 894, in which the fetal are 14, hospital level injuries are 91, minor injuries are 166 and unknown injuries are 623 injuries [6].

Health and safety issues also occur in night time during construction operations, it is due to visibility. In night time, If the machine work is on and the light visibility is poor so the chances of injuries may be high as compared to day time. There should be proper safety vest provided to workers and other employees at night time to reduce the vehicle and other injuries also from potential hazards. According to ANSI standards (ANSI/ISEA, 1999) 360° visibility should be required to ensure the safety. The safety vest should be use in wet weather condition to get the best performance from it. The worker will motivate to wear this safety vest all the time to reduce the night injuries [7]. According to [8] an effective participation of workers in work zones will enhance safety behaviour and improves health and safety performance

In previous studies we can see that construction safety and rule regulation only has been followed by owner or contractor. So many highway accidents occur due to many reasons, including improper construction environment, lack of research. Most of the previous research only related to theoretical not practical data, also it includes the management studies not health and safety. So due to these problem it was hard to find the correct data to make health and safety rules and regulations [9].

In Pakistan the research data for the health and safety of highway construction is inadequate so this research will help up to some extent to apply the health and safety standards. It also applied to increase the effectiveness of hazard identification and risk management to prevent the accident and safety precautions in work.

Research Objectives:

- To measure the level of safety standards provided by C&W Highways Swat, KP has increased health and safety.
- To analysis the implementation of health and safety measures, principles and requirements during construction.
- To assess the potential for increasing the current shortage and need for safety training in C&W Highways Swat, KP.
- To investigate the various techniques used by C&W Highways Swat, KP, to confirm the safety of the public during construction or maintenance.

Methodology:

For this research to investigate the health and safety measures, a group of people attached to the construction industry of Pakistan was taken. Respondents from different construction project of Khyber Pakhtunkhwa were selected. In these respondents most of them were government related departments and also general group of public and workers were involved. In this research the simple method which is deductive method were used. In this approach the data is theory type also dependent on literature review, so researcher can easily get the analysis from it to get the aims. Researcher were selected the detail web based questionnaires to collect the data for analysis. Web based questionnaires is the best way with fixed available options are label to get the data from the participant. 80 questionnaires were sent to different groups like engineers, department employees, contractors, workers and general public. For this purpose, a very easy Questionnaire questions were arranged and uploaded to google form to get the data in details. By doing this so data were received and then it was analyzed for the aim of research.

The Communication and work department is a big industry over all the Pakistan so it is very difficult to collect the data for the whole Pakistan in a short time, money and difficult to access every area, due to this reason why researcher select a district Swat C&W Highways department to easily collect the data with in short time. It is also convenient to access every place within the district Swat. C&W Swat is a separate highway sector in district Swat and having a large number of projects.

Results and Discussion:

The responses from 80 questionnaires, 56 questionnaires which is 70% were responded and 24 questionnaires which is 30% were not responded as shown in Pie graph in figure 1. In this research work the responses of questionnaires were represented in bar graphs in which group of employees like Project Managers, Engineers, Designers, Contractors and workers were involved. The results of each question in questionnaire were separately represented in bar graphs for easy understanding. The response of participants was collectedly represented for each question in the questionnaire.

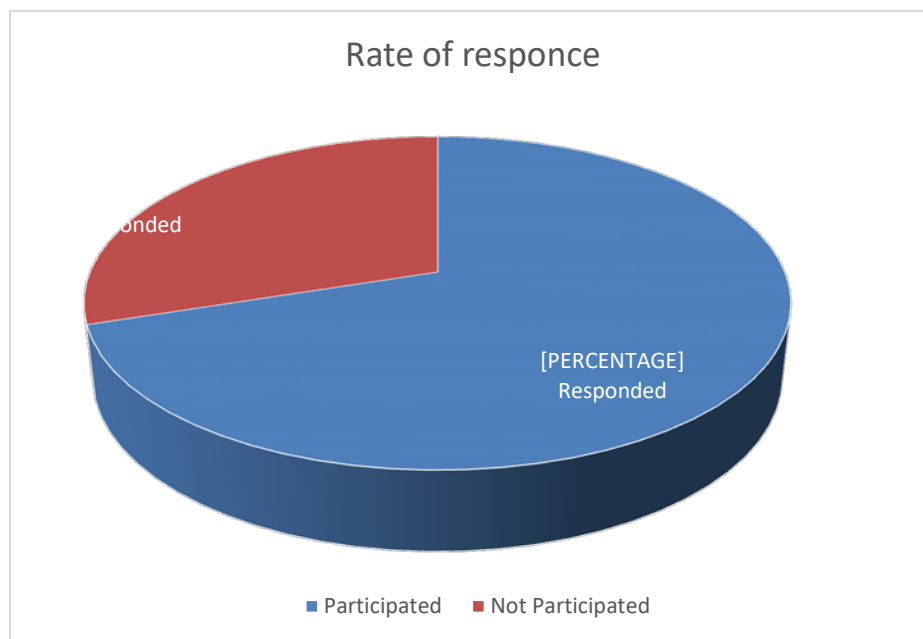


Figure 1: Percentages of Responses to Questionnaire

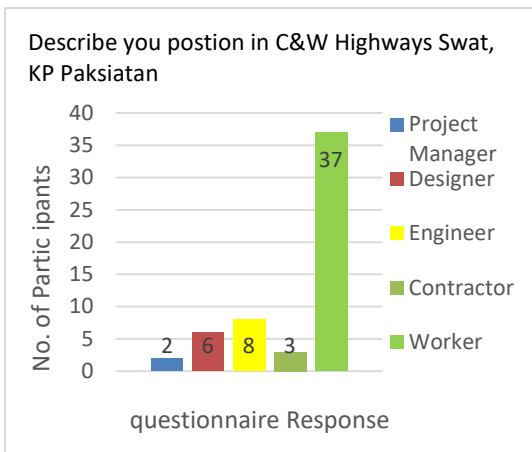


Figure 2: No. of Participants vs Questionnaire Response

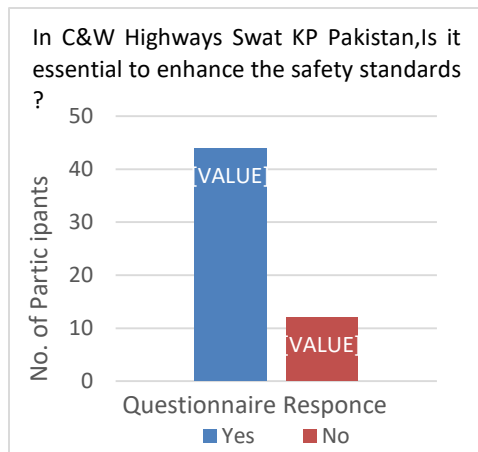


Figure 3: No. of Participants vs Questionnaire Response

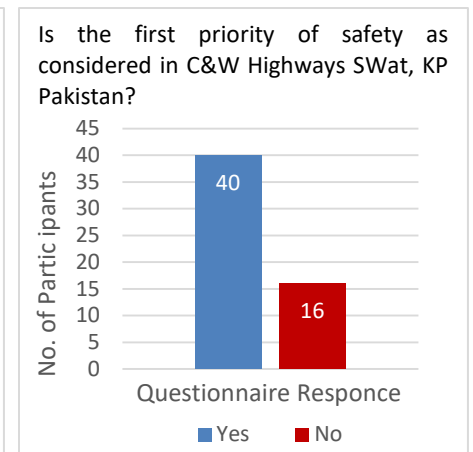


Figure 4: No. of Participants vs Questionnaire Response

The above graphs describe the questionnaires of online survey. The figure 2 shows that 56 out of 80 employees were participated, in which there are 2 project managers, 6 are designers, 8 are engineers, 3 are contractors and 37 are workers. In figure 3 it is described that 44 employees in the favour of enhancement of the safety standards but 12 employees were not in the favour. In figure 4, it is described that the 40 employees wanted to follow the safety as a first priority but 16 employees were not.

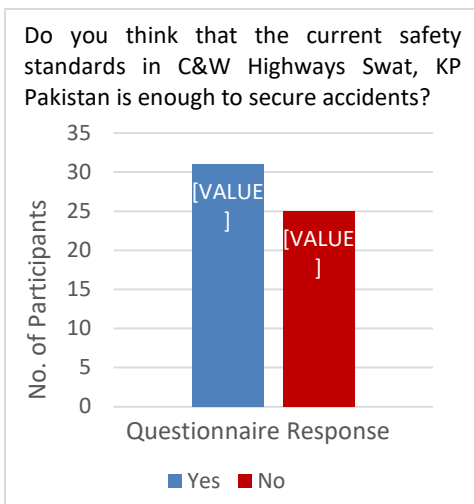


Figure 5: No. of Participants vs Questionnaire Response

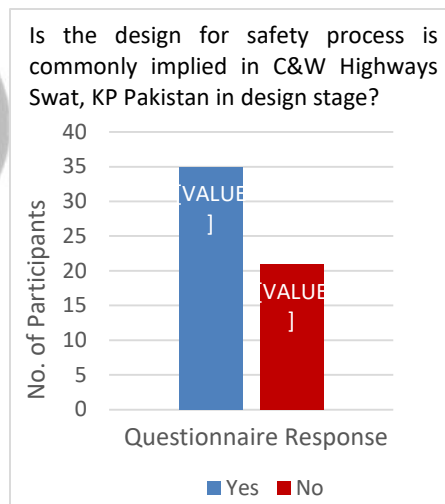


Figure 6: No. of Participants vs Questionnaire Response

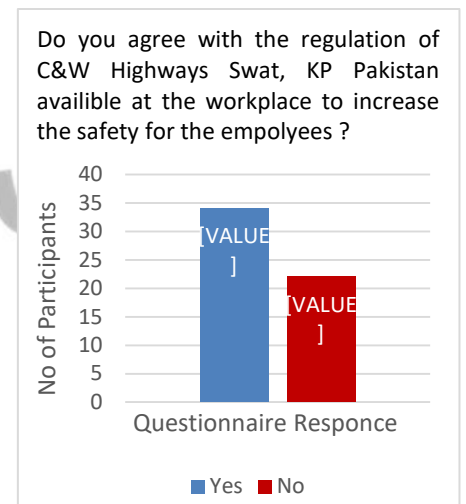


Figure 7: No. of Participants vs Questionnaire Response

In figure 5, It is described that the 31 employees were agree with the safety standards and 25 employees were not satisfied with the safety facilities provided by the C&W Highways Swat, KP Pakistan. Figure 6 shows that the 35 employees were agreed with the design for the safety process commonly implemented in C&W Highways Swat, KP Pakistan, while 21 employees were not contented. Figure 7 express that 34 employees were agreed with safety regulations of C&W Highways Swat, KP Pakistan while 22 employees were not agreed.

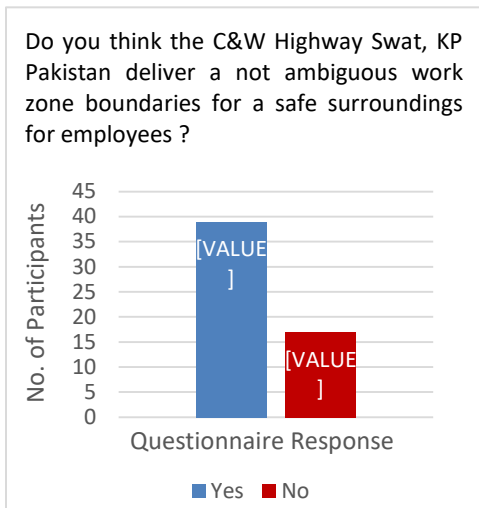


Figure 8: No. of Participants vs Questionnaire Response

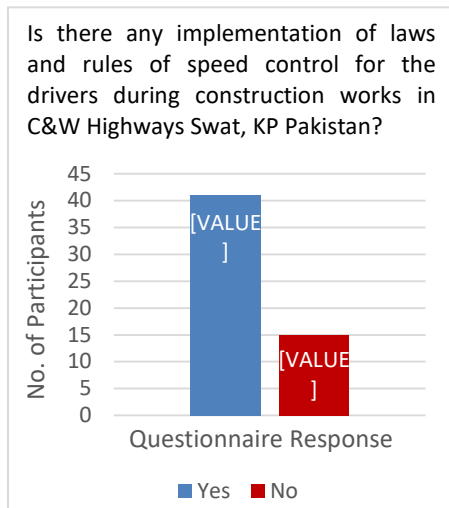


Figure 9: No. of Participants vs Questionnaire Response

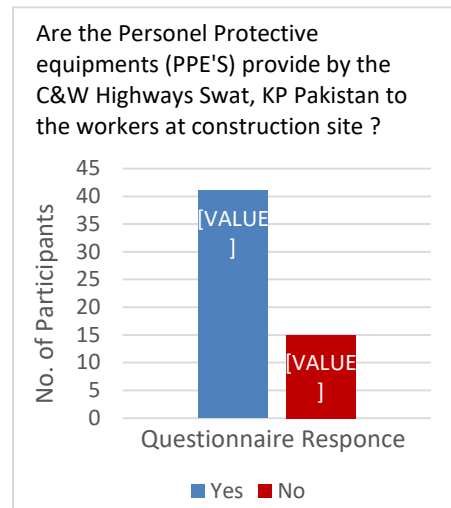


Figure 10: No. of Participants vs Questionnaire Response

Figure 8 shows that, 39 employees were convinced by the safety boundaries provided by the C&W Highway Swat, on the other hand 17 employees were not convinced. In figure 9, it shows that 41 employees were agreed for the implementation of laws and rules of speed control during construction works but 15 employees were not agreed. In figure 10 it is described that the 41 employees agreed that the department provide the Personal Protective Equipment (PPE) to the workers at construction site but 15 employees were not agreed.

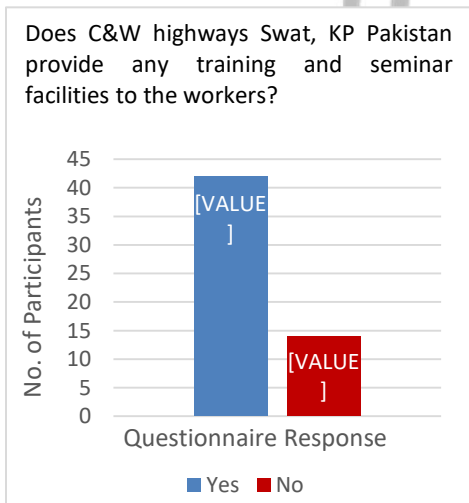


Figure 11: No. of Participants vs Questionnaire Response

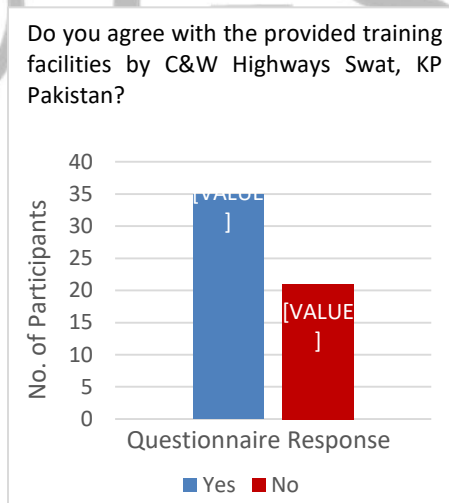


Figure 12: No. of Participants vs Questionnaire Response

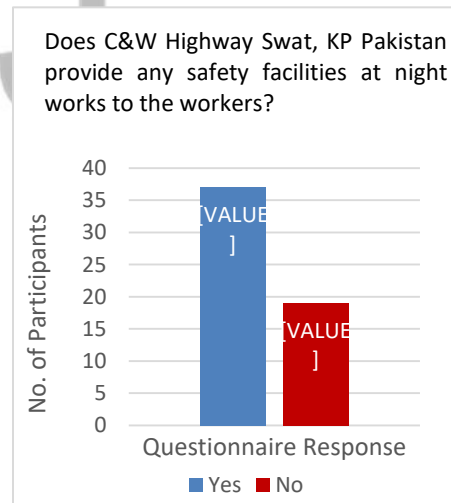


Figure 13: No. of Participants vs Questionnaire Response

In figure 11 it is analysed that 42 employees agreed that the department provide trainings and seminars to the workers but 14 employees were not agreed. Figure 12 shows that 35 employees were in favour of training facilities but 21 employees were not in favour. In figure 13 it is described that 37 employees agreed that the department provide the night works safety such as light facility, safety vest etc., while 19 employees were not agreed.

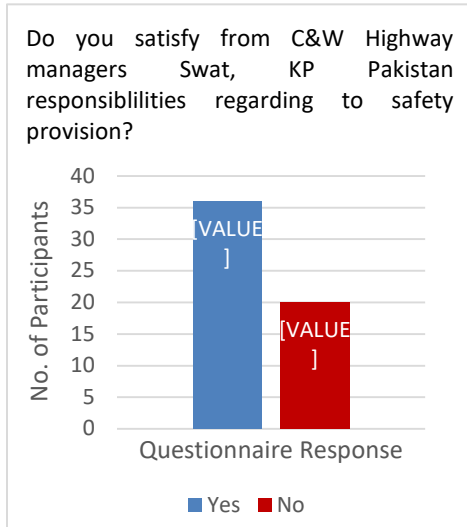


Figure 14: No. of Participants vs Questionnaire Response

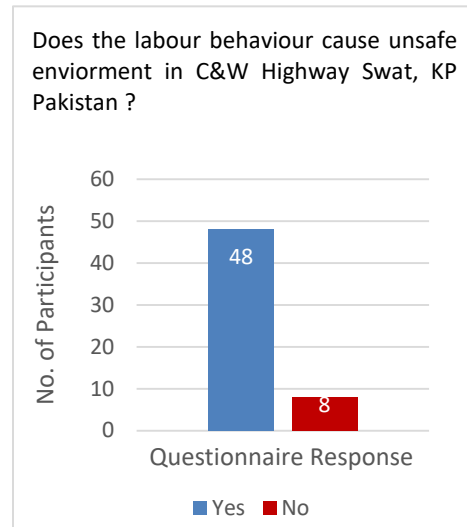


Figure 15: No. of Participants vs Questionnaire Response

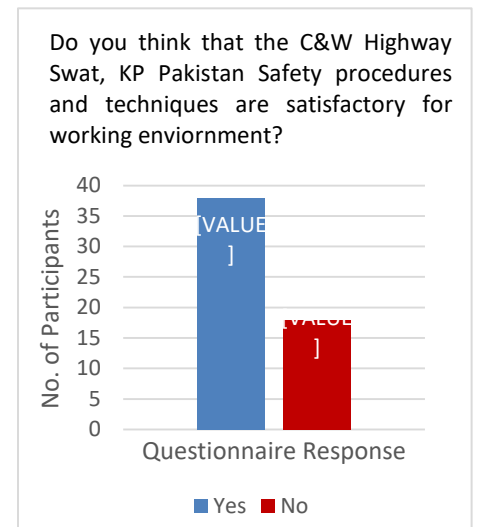


Figure 16: No. of Participants vs Questionnaire Response

In figure 14, it is stated that 36 employees were satisfied with the manager's responsibilities regarding to safety provision while 20 employees were not in favour. The figure 15 shows that 50 employees were agree that yes the injuries caused from the rude behaviour of workers but 8 were not agreed. Figure 16 shows that 38 employees were satisfied with the safety procedures and techniques and 18 were not agreed respectively.

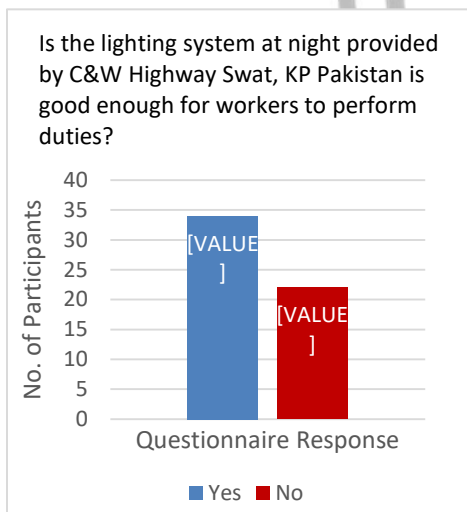


Figure 14: No. of Participants vs Questionnaire Response

Figure 17 shows that 34 employees were satisfied with the quality of lights facility at night but 22 employees were not satisfied. Different employees were involved in the questionnaires to put their views according to the survey.

Conclusion:

Average employees from the online questionnaires are satisfied which are 68.45% and the rest of Which are 31.55% are not satisfied from the health and safety execution and standards applied in C&W Highway Swat, KP Pakistan. In this survey the main reason of injuries is the rude behaviour of worker in work zone places. From the results most of the employees agreed that safety measures are also essential to implement and follow to ensure the safety. But in Pakistan there is a lack of safety standards to be followed Also the light facility at night needs more improvement to ensure safety.

Recommendation:

It is recommended that there should be an arrange site visits and site questionnaires surveys, and interviews. If more online and visit surveys are arranged in detail it will give more accurate data for analysis. Government should allocate funds to department for the safety measure to implement it and also funds for management activities. It is also important to hire a safety experience staff to train the employees to reduce the accidents. There should be a strict policy for safety measures in construction industry. It is also important to research more on this in detail and also research on safety measure in every construction departments and industry.

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