

EFFECTIVENESS OF A BEHAVIOUR BASED SAFETY INTERVENTIONS: A CASE STUDY IN A GAS INDUSTRY

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Introduction

In the oil and gas industry sector, workers are exposed to several risks that lead to occupational accidents and injuries. Unsafe behaviors are pointed as one of the factors related to such accidents (Kotzé & Steyn, 2013). In order to mitigate unsafe behaviors, the definition of safety awareness campaigns and safety training programs have been the adopted measures, since they allow an improvement of knowledge and understanding of safety, and consequently, a decrease at work accidents (Yin et al., 2017). Despite the relevance of previous studies on this matter, there is a gap in what regards to the effect of a safety intervention that address different training and awareness strategies and methods, in particularly in gas industry.

Study area

Occupational Safety and Health.

Objective

This study aims to design a safety intervention in a Liquefied Petroleum Gas (LPG) industry and assess its effect on safety behaviours.

Methodology

A total of 133 gas filling workers were included in this study. The LPG plant A was chosen for the design and implementation of the intervention programme - experimental group (n=78). A comparison group was defined in the LPG plant B and C, to which was not offered the intervention - control group (n=55).

This intervention included psychoeducational sessions, cases studies, video sessions and group discussion. A questionnaire to assess the safety outcomes was developed and applied to the workers. For this study, only the scales to assess safety behaviors were used: safety compliance and safety participation (Neal & Griffin, 2006). The questionnaire was applied prior, immediately afterward and two months later the intervention.

References

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Results

Table 1 presents the comparison of the results achieved for the variable safety behaviours, in the three moments for both the experimental group and control group.

The obtained results generally demonstrated a positive effect of the safety intervention in both, safety compliance and safety participation.

Significant differences were observed for safety compliance and safety participation in the experimental group. It is also observed that the results obtained two months after the intervention were higher than those obtained prior the intervention. However, two months after the intervention the results were lower than those obtained immediately after. In what regards to the control group, no significant differences were observed ($p>0.05$).

Furthermore, it was also possible to observe significant correlations between the safety compliance and safety participation, as the safety compliance increased, the safety participation also increased ($r=0.479$, $p<0.01$).

Table 1 - Comparison of the variables in the prior, immediately after and 2 months after intervention for experimental and control groups

Variable	Condition	Experimental group - pairwise comparisons		Control group - pairwise comparisons	
Safety compliance	Q1	Q1<Q2*	Q1>Q3	Q1<Q2	Q1<Q3
	Q2	Q2>Q1*	Q2>Q3*	Q2>Q1	Q2>Q3
	Q3	Q3<Q1	Q3<Q2*	Q3>Q1	Q3<Q2
Safety participation	Q1	Q1<Q2*	Q1<Q3	Q1>Q2	Q1>Q3
	Q2	Q2>Q1*	Q2>Q3	Q2<Q1	Q2<Q3
	Q3	Q3>Q1	Q3<Q2	Q3<Q1	Q3>Q2

Note: * $p<0.05$; Q1 - Questionnaire prior; Q2 - Questionnaire immediately after; Q3 - Questionnaire 2 months after

Discussion

The present study focused on the design of a safety intervention and assess its effectiveness. Overall, the results of this study showed a positive impact of safety intervention on safety behaviors (safety compliance and safety participation). This is in line with the results of Robaina et al. (2010), Fu et al. (2013) and Laberge et al. (2014) studies.

Conclusion

This study showed that it is possible to improve safety behaviours by designing an intervention program adapted to the reality of the LPG industry.