

# The Effectiveness of Behavior Based Safety Interventions (BBS) as an Efforts to Reduce Unsafe Action of Nurse in the Inpatient Unit 1 of Rsud Dr. Saiful Anwar Malang

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## ABSTRACT

The study was conducted to study the effectiveness of Behavior Based Safety (BBS) interventions in an effort to reduce unsafe action (how to lift patients from wheelchair to bed) with a nurse in the inpatient unit 1 Hospital Dr. Saiful Anwar (RSSA) Malang. This study was a pre-experimental design with treatment design approach of one group pre-test and post-test design with a number of research subjects were 42 people in the inpatient unit 1, analyzed by using McNemar Tets. The method used was by means of a questionnaire, observation, interview and intervention. Intervention is given in the form of video playback associated with lifting a patient from a wheelchair to a bed. Variables used in this research was unsafe acts (unsafe action) collected through methods *Critical Behavior Checklist* (CBC) and the level of knowledge and characteristics of the study subjects were collected through questionnaires. McNemar test results on the level of knowledge gained value with p-value of 0.007. That is, there is a difference between knowledge before and after the intervention. Whereas the McNemar test results against unsafe acts (unsafe action) obtained p-value of 0.359. This means that there is no difference before and after intervention. Therefore, it can be concluded that the intervention of *Behavior Based Safety* (BBS) given to nurses in the inpatient unit 1 RSUD Dr. Saiful Anwar effective only on the level of knowledge with a 77.6% rate of effectiveness.

**Keywords:** *Effectiveness, Behavior Based Safety (BBS) Interventions, Unsafe Action, McNemar Test.*

## INTRODUCTION

Hospital is a health care institution that organizes personal health services in plenary that provides inpatient, outpatient, and emergency, Hospital is one of the organization of health care providers which are required constantly improving the safety and health care to build a safer thus gaining customer loyalty. Safety in the hospital is an important aspect and basic principles of the health services as a critical component of quality management and one of the indicators in the assessment of hospital accreditation.

Service orientation in the hospital at this time is the safety of the patient, but the hospital staff safety is also important. Patient safety, safety officers and safety systems relate to each other. The hospital is one of the dangerous places for nurses, for nurses can be infected by a variety of risk of injury and illness at work. This is because nurses are health care workers who come into contact with the patient's in long period.

Work accident is an event that does not backfire and unpredictable, in terms of causing losses of time, treasure and soul of labor in the process industry or related work, Workplace accidents are generally caused by two things unsafe work behavior (unsafe action) and unsafe working conditions (unsafe conditions). This is supported by the Dupont Company research showing that 96% of workplace accidents are caused by unsafe behavior and 4% were caused by unsafe condition.

Results report by the National Safety Council (NSC) shows that accidents in RS 41% larger than other industry workers. Common causes are pricked, sprains, lumbago, scratches/ cuts, burns, and infections. There was also obtained from the results of research in health facilities hospitals, approximately 1,505 women workers at the Hospital of Paris impaired musculoskeletal (16%) where 47% of the disruption of pain and lumbar spine area. Musculoskeletal nurse interference is related to the manner or unsafe working position when treating

patients for example, such as lifting the wrong way.

Services are installed inpatient health care complex that 60% of workers are nurses. Nurses are professionals in the health sector who have a high risk of the occurrence of occupational diseases and accidents. Nurses are health care workers who are always in direct contact with patients; nurses are at risk of contracting various infectious diseases. Results of data polyclinic Hospital Preparedness average 10 nurses per year come to the clinic with complaints of experiencing LBP or other musculoskeletal injuries due to push, lift or move pasien.

Results of preliminary observations and interviews on several nurses at Regional General Hospital (RSUD) Dr. Saiful Anwar (RSSA) Malang in the inpatient unit, there are nurses who experience back pain at the time of providing care to the patient (how to lift patients from wheelchair to bed), because of factors work that still manual handling is lifting patients with severe patients vary so require over-exertion to lift the patient.

Accordingly, this study focuses on the inpatient unit 1 associated with lifting a patient from a wheelchair to a bed done by nurses based on the operational standards prosedur (SOP). In the inpatient unit 1 has a high workload and the quantity of the number of patients and more each day with the mobility of nurses activity very much. Conditions like these that can cause any disturbance muskoleskeletal nurse. Unsafe work behavior, if constantly performed by nurses would risk serious industrial accidents. The results of the data analysis work accidents that have occurred at the hospital, basically factors affecting the accident one of them is a behavioral factor.

Based on the reference that unsafe behavior is the biggest contributor to accidents, to reduce occupational accidents and to improve safety performance can only be achieved with the efforts of Behavior Based Safety (BBS) in the workplace, which is expected to be created a safety culture in the workplace, Behavior Based Safety (BBS) is an application of the method invented by Herbert William Heinrich. Behavior Based Safety (BBS) is an approach to preventing workplace accidents through behavioral change approach. Behavior Based Safety (BBS) is a scientific way to understand the behavior of someone who is related to safety. Application of Behavior Based Safety (BBS) is an effort to intervene

in unsafe behavior into safe behavior in its aim to achieve zero injuries.

Application of Behavior Based Safety (BBS) using DO IT (Define, Observation, Intervensi and Test) on the hospital is expected to increase the knowledge and safe behavior on nurse khususnya nurses who were in the inpatient unit 1 associated with unsafe action (unsafe behavior). Accordingly, this study was conducted to study the effectiveness of interventions Behavior Based Safety (BBS) in an effort to reduce unsafe action on nurses in the inpatient unit I Hospital Dr. Saiful Anwar Malang (RSSA) “.

### MATERIAL AND METHOD

This study uses a pre-experimental design. Researchers gave the intervention to 42 nurses in the inpatient unit 1 RSUD Dr. Saiful Anwar Malang to determine the effectiveness of the level of knowledge and unsafe behavior (unsafe action). Interventions were given to the subject of research in the form of video playback Capture way patients from wheelchair to bed. Measurements before the intervention (pre-test) conducted research on the subject to determine the initial value of the variable course of a study. Then the intervention was given to the subject of the research group. After the intervention, the variable value measurements conducted research on the subject again (post-test). To measure variables unsafe acts (unsafe action) before and after the intervention is done by using the format of Critical Behavior Checklist (CBC) and to measure the knowledge variables used a questionnaire based on the operational standards procedure (SOP). The design of study is described in Figure 1.

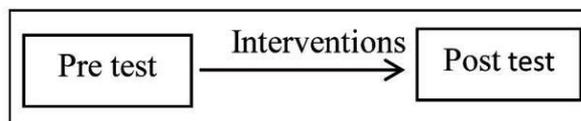


Figure 1. Research Design

Data were analyzed by using McNemar Tets. Whereas, the level of effectiveness of interventions of Behavior Based Safety (BBS) was calculated by using the following formula of effectiveness:

$$\text{Effectiveness} = \frac{\text{skor post test} - \text{skor pre test}}{\text{skor pre test}}$$

## FINDINGS

Characteristics of the study respondents consisted of 42 nurses of inpatient unit 1 RSUD Saiful Anwar Malang based on a questionnaire as follows.

**Table 1. Characteristics of Research Subjects**

No.	variables	Category	Percentage
1.	Gender	Man	31%
		woman	69%
2.	Age	20-30 years	78.6%
		31-40 years	9.5%
		<41 years	11.9%
3.	Years of service	<6 years	59.5%
		6-10 years	26.2%
		> 10 years	14.3%
4.	last education	D3	76.2%
		S1	19.0%
		nurses	4.8%

The data collection characteristics of the subject of research conducted by questionnaire interviews include age, gender, education and past work period, below is an explanation of each study subject characteristics:

### Gender

The majority of nurses in inpatient unit I RSUD Dr. Saiful Anwar were female. Respondents were 29 female nurses with a percentage of 69%, while the male nurse were 13 nurses with a percentage of 31%. Results of psychological research shows that female workers are more willing to conform to the rules in the workplace. Due to the aggressive nature of which is owned by male workers tend to be against the existing authorities, so it will be less careful in their work and will ultimately lead to an accident. This can be a problem for men who work as nurses.

### Age

Based on the characteristics of age known that most of the research subjects in inpatient unit 1 RSUD Dr. Saiful Anwar was at the age of 20-30 years by 78.6% and most of them were in the range of age <41 years as many as five nurses 11.9%. So it can be said

that the majority of nurses were at a younger age than older nurses. It can be used as capital for the nurse to give the treatment to the patient (lifting or transferring patients from wheelchair to bed) because the nurse with a relatively young age would be stronger to move or lift a patient from a wheelchair to a bed. The reason is found based on the results of interviews with study subjects.

### Years of service

The highest percentage of nurses based on length of tenure is nurses with less than 6 years of were 59.5%. Nurses with terms of 6-10 years were 26.2% and only 6 respondents (14.3%) who have work experience of more than 10 years. Experience for someone to recognize hazards in the workplace is getting better with age and years of service, so that the old workers will be more familiar points of danger at their workplace, which in turn can minimize the occurrence of errors (error) which may lead to an accident.

### Last education

Most (about 80%) of nurses in Indonesia have three nursing education diploma. Respondents' education level that most of the Nursing Diploma (D3) of respondents 32 with the percentage of 76.2% and only 2 respondents who holds final training as nurses. The level of education is a predisposing factor one behaves. Education is a fundamental factor for motivating the behavior of or provide personal references in one's learning experience. Therefore, a person's level of education will determine the extent of the person's knowledge and how to act and behave. Research subjects were a Diploma of Nursing (D3) having practical experience of field work more than nurses with S1 degree who will surely add to the learning experience of a person.

**Table 2. Effectiveness of Interventions Behavior Based Safety (BBS) Towards Knowledge Before and After Intervention.**

Prior knowledge Intervention	Knowledge After Intervention		Total
	Enough	Good	
Enough	5 (11.9%)	17 (40.5%)	22 (52.4%)
Good	4 (9.5%)	16 (38.1%)	20 (47.6%)
Total	9 (21.4%)	33 (78.6%)	42 (100%)
McNemar	0.007		

Based on test McNemar test is known that p-value <0.05, it can be concluded that there is a difference between before and after intrevensi associated with the level of knowledge. The results are consistent with results of previous studies conducted by Yuni entitled "Effectiveness of Interventions Behavior Based Safety (BBS) in an effort to reduce unsafe behavior of nurses in the emergency department of Hospital Dr. Isaac Tulungagung ". The results of this study look at the effectiveness of interventions BBS on the level of knowledge according to the characteristics of respondents are known to carry a significantly increased knowledge.<sup>4</sup>

Based on the results of the above table it can be seen that the respondents who have sufficient knowledge before the intervention were 22 respondents (52.37%), increased knowledge after the intervention as much as 33 respondents (78.47%). Subject of the study prior to the intervention with a good knowledge were 4 respondents (9.5%) in the category of sufficient knowledge after the intervention. The subject of research which has decreased the level of knowledge after the intervention due to the condition of the respondents at the time of data collection post the knowledge that respondents experience fatigue because the data collection was carried out on the night shift than that the study was conducted in the month of fasting so it will aggravate the condition respondent.

To determine the effectiveness of interventions big Behavior Based Safety (BBS) can be calculated with the following formula effectiveness.

$$\text{The effectiveness knowledge} = \frac{78,6 - 47,6}{47,6} = 77,6\%$$

The level of effectiveness of interventions Behavior Based Safety (BBS) on the level of knowledge in the inpatient unit 1 Hospital Dr. Saiful Anwar is 77.6%. This means that the intervention of Behavior Based Safety (BBS) which is given by way of video playback on how to lift patients from wheelchair to bed effectively.

**Table 3. Effectiveness of Interventions Behavior Based Safety (BBS) Action Against Unsafe (unsafe action) before and after intervention.**

unsafe Action before Intervention	unsafe Action after Intervention		Total
	safe action	Measures Unsafe	
safe action	8 (19%)	7 (16.7%)	15 (35.7%)

Measures Unsafe	12 (28.6%)	15 (35.7%)	27 (64.3%)
Total	20 (47.6%)	22 (52.4%)	42 (100%)
McNemar	<b>0.359</b>		

Based on test McNemar test obtained p-value <0.05, therefore, it can be concluded that there is no difference between before and after intrevensi associated with unsafe acts (unsafe action). Although there is no difference, but the results of the frequency of unsafe acts (unsafe action) to the nurse in the inpatient unit 1 high majority. To change people's behavior in terms of attitude and motivation towards safer work is not an easy task and does not happen overnight.s So naturally if intervention Behavior Based Safety (BBS) conducted still does not work because there are many factors that affect a person's behavior

Based on the results of the above table reveals that a decline in unsafe acts (unsafe action) when lifting a patient from a wheelchair to a bed although not significantly. Before the intervention, the respondents who carry out unsafe act (unsafe action) were 27 respondents (64.3%). After the observation conducted there were 22 respondents (52.4%) were still perform unsafe acts, this means that only 5 respondents who reduced the unsafe action after intervention was given to the them. Subject of the study prior to intervention with a safe action were 7 respondents (16.7%) to the category of unsafe actions after the intervention. This happen due to the time of observation (observation after the intervention), making the data was taken on the night shift (23:00 to 00:00) where the condition of the research subjects have been very exhausted so that the data of post-test for unsafe acts (unsafe action) does not match the expected result.

To determine the effectiveness of interventions of Behavior Based Safety (BBS) can be calculated with the following formula of effectiveness.

$$\begin{aligned} \text{The effectiveness of BBS interventions} &= \frac{\text{skor post test} - \text{skor pre test}}{\text{skor pre test}} \\ &= \frac{52,4 - 64,3}{64,3} \\ &= 51,4\% \end{aligned}$$

Thus, the level of effectiveness of interventions Behavior Based Safety (BBS) related to unsafe acts (unsafe action) saat lift patients from wheelchair to bed

in the inpatient unit 1 Hospital Dr. Saiful Anwar is 51.4%. It can be concluded that the intervention of Behavior Based Safety (BBS) which do not effectively

### CONCLUSION

The intervention of Behavior Based Safety (BBS) through video playback given to nurses in the inpatient unit 1 of RSUD Dr. Saiful Anwar Malang (RSSA) can effectively improve the knowledge of nurses with the level of effectiveness of 77.6%.

The results of the identification of unsafe acts (unsafe action) before and after the intervention of behavior-based safety (BBS) note that although not all research subject change behavior but there are a few research subjects with unsafe acts (unsafe action) has been reduced after the intervention. The intervention of Behavior Based Safety (BBS) to reduce unsafe act through video playback given to nurses in the inpatient unit 1 RSUD Dr. Saiful Anwar Malang (RSSA) does not work with the level of effectiveness of 51.4%.

**Conflict of Interest:** None

**Source of Funding :** None

**Ethical Clearance:** The study was approved by the ethical committee of Hospital Dr. Saiful Anwar Malang. All subjects were fully informed about the procedures and objectives of this study and each subject prior to the study signed an informed consent form.

### REFERENCES

Laws Of The Republic Indonesia. No. 44 Of 2009. On Hospital.

Internatioanal Joint Commission, (2011). Acreditation Standard For Hospital 4 Edition. Oarkbook Terrace-Illinois: Department Of Publications Joint Commission Resources.

Goodman, Gr (2004). *Fragmented Patient Safety Concept; The Structure And Culture Of Safety Management In Health Care*. Economics Nursing, 22 (1), 44-46.

Tarwaka. (2014). *Management And Implementation Of K3 In The Workplace*. Ed 2, Surakarta.pustaka Hope Library, P 11-245.

Decree Of The Minister Of Health Of The Republic Of Indonesia. No. 432 / Menkes / Sk / 1V / 2007. *Guidelines On Safety And Health Management Kerka (K3) At The Hospital*.

Denisa Demak, (2013). *Safe Behavior Cause Analysis Working On Hospital Nurses In Islam Asshobirin South Tangerang*, Thesis. Jakarta Faculty Of Medicine And Health Imu Syarif Hidayatullah State Islamic University.

Meity Nur, (2012). *Pemgaruh Use Safety Guide Nurses To The Occupational Safety And Health Behavior At The Hospital Nurse Alert Kingdom*, Thesis. Master Of Nursing Science Program Depok

Robbins And Judge. 2008. *Organizational Behavior*, Twelve Edition, Publisher Salemba Four: Jakarta.

Suma'mur. 2009. *The Company Hygiene And Health At Work*. Jakarta: Sagung Seto.

Bppsdm-Ministry Of Health, (2011). *Dominating Nurses Health Workers*.

Notoatmodjo S, (2003). *Pendidikan And Health Behavior Mold 1*. Rieneka Cipta Jakarta.

Kusumaningtyas Y (2011). *Intervention Of The Effectiveness Of Bbs As An Effort Efforts To Reduce Unsafe Behavior Emergency Room Nurses Hospital Dr. Isaac Tulungagung*, Theses. Study Program Kesehatan And Safety Surabaya.

Stranks, Jeremy. (2007). *Human Factors And Behavioral Safety*. Oxford Elsevier Ltd. P 442-443.



