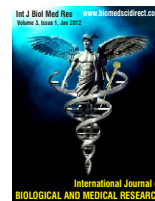


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International Journal of Biological & Medical Research

Journal homepage: www.biomedscidirect.com



Original Article

Observations on aseptic precautions during procedures, preintervention & postintervention

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ARTICLE INFO

Keywords:

Aseptic precautions
Hand wash
Intervention

ABSTRACT

Aims & objectives : Observe aseptic precautions followed by health care workers in some selected procedures. Find out reasons for observed shortcoming. Prepare a strategy for improving shortcomings and implement the same on individual basis and unit basis. Reevaluate after 7 days and after 1 month of implementing the strategy. **Methods:** Observation on aseptic precaution were done during procedures performed in NICU, PICU and ward by health care workers. Observations were done by investigator & selected observer. Observations checked against prepared standard checklist. Reasons for observed shortcomings were elicited by a questionnaire given in proforma. Intervention was done at individual and unit basis. Observations were repeated post-intervention after 7 days to find out the short term effect and after 1 month to find out longer-term effect of intervention. **Design:** Descriptive observational study. Study period 1 years. **Result:** Aseptic precautions were followed fully only in 42% cases and this adherence increased to 86% (t value 7.99, $P < 0.01$) after 7 days of intervention. After 1 month of intervention it decreased to 70% (t value 3.40, $P < 0.01$), however, it was still higher than preintervention (t value 4.89, $P < 0.01$). **Conclusion:** Deficiencies in taking aseptic precautions during procedures can be improved significantly by interventions like education and improving facilities. The effect of interventions tends to wean off quickly with time and therefore, regular supervision and education is necessary for optimal compliance to aseptic precautions.

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1. Introduction

The first requirement of a hospital is that it should do sick no harm. (Florence Nightingale, 1863). For more than a century it has been known that patients acquired infections after admission to hospital. The hands of caregiver are the most common source of indirect contact transmission [1,2]. This study was designed to detect any break in aseptic precaution and the impact of intervention like education to prevent break in aseptic precaution in subsequent procedure. This should be useful to minimize nosocomial infections which has a significant impact on morbidity and mortality of admitted patients.

2. Methods

Observation on aseptic precaution were done during procedures performed by health care workers. Study design was descriptive observational study. Total 150 procedures were observed. Procedures like endotracheal intubation, central venous line insertion, urinary catheter insertion, lumbar puncture, peripheral intravenous line, IV fluid preparation & hand wash were observed. Observations were done during morning, afternoon and in night. Observations were done by investigator and a few selected observer. Reasons for observed shortcomings were elicited by a questionnaire given in proforma. Intervention at individual level was done in the form of a series of educational program and training. The unit level intervention was done by conducting seminars and by providing necessary items required for taking aseptic precautions. Observations were repeated post-intervention after 7 days to find out the short term effect and after 1 month to find out longer-term effect. Ethical clearance obtained. Unpaired 't' test for two samples proportion used for statistical analysis.

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3.Results

Aseptic precautions were followed fully only in 42% cases and this adherence increased to 86% (t value 7.99, $P < 0.01$) after 7 days of intervention. After 1 month of intervention it decreased to 70% (t value 3.40, $P < 0.01$), however, it was still higher than preintervention (t value 4.89, $P < 0.01$). During hand wash aseptic precautions followed fully in 45% cases & increased to 80% (t value 3.23, $P < 0.01$) after 7 days of intervention. After 1 month of intervention it significantly decreased to 62% (t value 1.73, $P < 0.05$) but higher than preintervention (t value 1.60, $P > 0.05$), however the difference was insignificant. The difference of adherence to aseptic precaution between doctor & nurse was not significant (t value 0.093, $P > 0.05$). Aseptic precautions were followed completely in morning in 75%, in afternoon in 65% and in night in 55% of procedures. It is found that the common reason given was lack of knowledge in 48 procedures and it decreased to 13 (t value 5.02, $P < 0.01$) after 7 days of intervention. After 1 month of intervention it increased to 28 (t value 2.51, $P < 0.05$), however, it was still higher than preintervention (t value 2.70, $P < 0.01$).

Table. 1 Overall relationships of following aseptic precautions and intervention for total procedure observed

	T	F
Pre	150	64 (42%)
Post 7	150	130 (86%)
Post 30	150	106 (70%)

Comparison between	't' value	'p' value	Significance
Pre & Post 7	7.99	$P < 0.01$	HS
Pre & Post 30	4.89	$P < 0.01$	HS
Post 7 & Post 30	3.40	$P < 0.01$	HS

T-Total procedures observed

F-Number of procedures in which aseptic precautions were followed fully

Pre -Preintervention,

Post 7 -Postintervention after 7 days,

Post 30 -Postintervention after 1 month

HS - Highly significant

4.Discussion

Similar to Barbara CC et al [3], compliance to aseptic precaution increased from 42% to 86% after 7 days of intervention but decreased to 70% after 1 month. County et al [4] showed that compliance to hand washing increase from 28% to 81% after education & decreased after 3 years. Significant difference between 7 days and 1 month postintervention suggest that effect of educational interventions tends to erode quickly, hence repeated education at frequent intervals is required. Similar to Pittet D et al [5], compliance to hand wash was poor. Doctors & nurses followed aseptic precaution equally as against Patarakaul K et al [6] who found significant difference. Aseptic precautions followed more in morning, followed by afternoon and then in night. As stringent and continuous supervision is not possible in night, compliance in night shall be increased by creating self awareness and motivation

in health care workers. Similar to Kennedy AM et al [7], most common reason given for observed shortcomings was 'lack of knowledge'. After 7 days of intervention, the frequency of reason 'lack of knowledge' decreased but again increased after 1 month. This may be because of frequent change of nursing staff and human nature of forget fullness. Education in combination with performance feedback is the most successful intervention as shown by Dubbert PM et al [8]. Trick WF et al [9] showed that intervention program is must to improve adherence to aseptic precaution. As found by Misset B [10] also, intervention must be a continuous process and must be updated regularly depending upon problems noted. Limitation of this study was the method used to collect data, as some health care workers may knew about study. However, this factor should have had a similar effect for both steps of observations (pre and postintervention).

5.Conclusion

Most common step not followed was hand wash. Compliance was same by doctors and nurses. Aseptic precautions were followed more accurately during morning. Deficiencies in taking aseptic precautions during procedures are common & can be improved significantly by interventions like education and improving facilities. The effect of interventions tends to wean off quickly with time and therefore, regular observation and education is necessary.

Conflict of interest - none

Funding source - none

Contribution - Shikhar Jain- concept & design, critically revised article & final approval for publication. Abhay Bagul- data collection, data analysis, manuscript drafting & final approval for publication.

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