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"WELCOME- Weekends, Exchange hours and Late nights are Cause of increased Mortality in Emergency and ICU's"- a hospital based study

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Abstract

Objective:-To study the effect of weekend, duty exchange hours and late night on mortality in emergency and various intensive care units. **Material And Methods:-**This is a 1 year retrospective survey conducted at NIMS Medical College and Hospital- a tertiary hospital in rural area close to Jaipur. Death records from Emergency, Medical ICU, Surgical ICU, Respiratory ICU, Cardiac Care Unit were accessed and time/day of death was noted and classified accordingly. Tests of statistical significance were done using Chi-square Test. **Results:-**A total of 225 deaths were recorded during the period of study out of which weekend deaths are 71, late hours death are 61, and exchange hours death are 67. **Conclusion:-** The rate of deaths were found to be Statistically Highly Significant.

Keywords: Weekend deaths, late hour deaths, exchange duty deaths, deaths in ICU.

Introduction

The time of death in hospital is generally obtained from medical certificates, medical records of hospital.In general, medical records of patients who died in hospital may not contain the exact time of death as many a times it is probably the time the intensivist/ physician declares death, however the difference is not so much, they are usually recorded appropriately[1].

Many studies revealed that majority of hospital deaths are during weekends and after regular working hours or late night hours[2-4]. This is well known as weekend effect[5-8].

There are many complex reasons for this. Poor communication between doctors, improper handovers at night, inavailability of proper specialist, low man power, unavailability of some tests or procedure, sleeping hours, not waiting till staff/ doctor of next shift arrives, poor handovers etc. are considered to be the reasons for this[9-12].

However , there is not enough data or reporting regarding this in developing countries like India. Hence this study is aimed to study the weekend, late night and exchange hours effect on mortality in tertiary rural hospital of India. Hope this finding will try to strengthen our facilities and prevent avoidable deaths.

Material and Methods

This is a 1 year retrospective survey conducted in emergency and various ICU'S in NIMS Medical College and Hospital located in a rural area close to Jaipur. In our hospital almost all speciality services are available. Most of the emergency/ICU cases are of acute MI, respiratory failure, congestive heart failure, snake bites, poisoning and road traffic accidents. In the last 1 year (July 2014 – June 2015), 225 deaths were recorded from emergency and all ICU's, this is excluding brought dead patients. Data is obtained from medical record department. We classified the deaths into days and time.
Tests of significance were done using Chi-square test at 95% confidence interval. The data obtained were analysed using Excel sheet/SPSS software.

Results

We found that out of 225 deaths (n), 71 (31.56%) are weekend deaths, 67 (29.78%) are duty exchange hour deaths and 61 (27.11%) are late hour deaths.

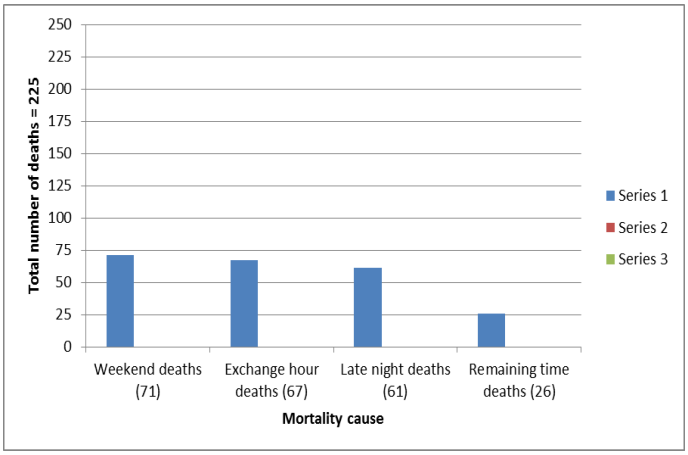
n = 225

X^2 = (Observational value - Expected value)^2 / Expected value.

Expected value = n / 4= 225/4=56.25

Table 1: Distribution of deaths

Time/day	Number	% of deaths	X^2 value(chi square)
Weekends	71	31.56%	3.86
Exchange hours	67	29.78%	2.05
Late night	61	27.11%	0.40
Remaining	26	11.55%	16.26
Total	225	100%	22.57



Individual chi-square value is calculated and total chi-square value of 22.57 is plotted through Excel sheet/SPSS software which gave P value < 0.001 which is highly significant.

Discussion

The main findings of our retrospective cohort analysis is that patients admitted to the various ICU's and in emergency during weekends, exchange hours and late nights which are generally called as off hours have increase mortality. In our study we classified weekends as a duration from Saturday morning 8 a.m. to Monday morning 8 a.m. Exchange hours are the time period 7:30 a.m. to 8:30 a.m. and 7:30 p.m. to 8:30 p.m. , as duty shifts in our hospital are from 8 to 8. Late night hours are the time duration from 12 a.m. to 6 a.m. The possible explanation for this are fatigue of residential staff/doctors[9], low manpower on weekends, less accessibility to certain resources like laboratory, radiology, consultants, etc., and the people who work on this off hours are less experienced and less qualified[15]. Studies have proved that most common cause of death in first 24 hours of admission are more commonly due to cardiac arrest and arrhythmias which are likely to be missed in these off hours[14]. It is likely to miss ventricular tachycardia on saturday night 1 a.m instead of Monday morning 10 a.m, is it not?

This weekend effect is more commonly seen in rural hospital as compared to tertiary care centres[14]. Many previous researches from Australia[13], New Zealand[13], Spain[15], Denmark[16] and Nigeria[17] who conducted large multicentre studies do support this survey. This can be largely limited by improving weekend services by motivating personal in the face of limited staffing. Hiking wages to the people who work in this off hours, providing round the clock services, strict handovers by providing hand over books, proper division of work during late hours, following quality protocol and guidelines[18].

Limitations

This is just one year study with limited sample size, study would have been much strong with large sample data with long duration.This study is conducted in hospital located in rural area, though it is teritiary hospital, it is unlikely to have quality services in odd hours.

Conclusion

Although the title of my study is "WELCOME", it is not a welcome sign. Out of 225 deaths, we found that 199(almost 90%) are during weekends, during exchange hours and during late night hours which is highly significant ($p<0.001$). Thus reflecting the defects in health infrastructure and expenditure in developing coutries like India especially in rural areas. If atleast 10% of these deaths can be prevented that could drastically improves survival rates in critically ill patients. Hence, recognizing different causal associations leading to these deaths and correction of them is very much needed.

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