A STUDY OF DOMESTIC ACCIDENTS (DA) IN AN AIRFORCE COMMUNITY

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ABSTRACT

1420 members of 360 families were studied for incidence of domestic accidents (DA) over a period of one year. Average incidence of DA was 110.56 per 1000 per year. Statistically significant bimodal distribution of above-average incidence was seen under 15 and above 36 years age group. Incidence of DA was inversely related to literacy and economic status of the population. Commonest type of accident was fall (54.1%) injuring lower limbs in majority of cases (40.1%). Commonest place of accident was garden/ compound (34.39%) and most of the accidents occurred between 1400-2000 hours (49.94%). Interaction of certain predisposing factors was found significant in the occurrence of DA. Further community studies have been suggested to create awareness regarding prevention of DA among the families.

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KEY WORDS: Domestic accident.

Introduction

Accident has been defined as occurrence in a sequence of events which usually produces unintended injury, death or property damage. Domestic accident is one which occurs in the home or its immediate surroundings [1]. An US report documented that heart diseases and cancer account for 3.8 million years of the life lost in contrast to 4.1 million years in injuries and accidents. [2] Moreover, among all the accidents, domestic accidents are the most numerous [3]. Armed Forces community being derived from varying socio-cultural and ethnic background are often exposed to the problems of adaption to widely differing socio-cultural and housing patterns at regular and frequent intervals, which makes them vulnerable. Therefore it was thought provident to study the occurrence of domestic accidents and its association with other factors, if any, in an Air Force community.

Material and Method

The study was carried out in an Air Force Station in South India during Aug 92 to Jul 93. A retrospective analysis among 37 members of ten randomly selected families showed an occurrence rate of 16.22% DA during previous one year. Considering the estimated occurrence and the total population 5011, with the help of Cochran's principle (4), the sample size was calculated to be 1420. Out of one thousand two hundred seventy airmen families, three hundred and sixty families were randomly selected to study a sample size of 1420 family members. During the initial visit, basic demographic data regarding age, sex, per capita income, literacy status and family size were obtained. Each house was screened for certain predisposing factors known to cause DA which included haphazardly kept furniture in living rooms, presence of loose electrical fittings, sharp objects, drugs and poisons/electrical sockets within reach of children, poor illumination

in the stairs and toilets, unlevelled surface and wild growth shrubs around the compound.

This is a commonly based epidemiological study and was conducted by fortnightly home visits during which the residents were asked about any accident and on occurrence of a such, details were recorded on a pretested proforma which included date, time, place and type of accident (fall, crush, blunt trauma, injury with sharp object, burn, poisoning and animal bite); nature, severity and anatomical site of injuries and presence of any predisposing factor. The results were analysed, tabulated and statistically validated.

Result

Out of 360 families, 24 (6.6%) had their aged parents with them. Majority (41.3%) of the subjects belong to under 15 age group. Sex ratio was 818 female per 1000 male. Average family size was 3.9.

The average cumulative incidence of DA was 110.56 per 1000 per year (Table 1). A bimodal distribution of incidence above the average was seen in under 15 and above 36 years age group indicating their vulnerability and the same was statistically significant. The incidence rate among male and female were 126.7 and 90.7 per 1000 per year respectively and the difference was statistically significant. The males were at 1.45 times higher risk than the females. Highest incidence (151.97 per 1000 per year) was seen among subjects educated upto 5 standard (Table 2). The incidence of DA decreased with increase in literacy status and the association is statistically significant.

Highest incidence (170 per 1000 per year) was seen in the families with lowest income, however, the same is not statistically significant (Table 3).

Among the injuries, fall was commonest (54.1%) followed by crush/blunt injury (24.8%) and injuries with sharp object (12.1%). Among the injuries abrasion was frequent (40.7%) followed by lacerations (22.9%) and contusion (14.6%). Lower limb was more often injured (40.7%) followed by upper limb (24.8%) and head/face (19.7%). 57.32% of injuries were moderate, 31.35% were trivial and 10.33% were severe. Commonest place of accident was garden/compound (34.39%) followed by living room

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TABLE 1
Distribution of domestic accident (DA) according to age and sex

Age group (years)	Male		Female		Total population		Total	Rate per 1000 person years
	No. affected with DA	No. not affected with DA	No. affected with DA	No. not affected with DA	No. affected with DA	No. not affected with DA		
00 - 05	19	98	14	68	33	166	199	165.8
06 - 15	37	168	15	160	52	328	380	136.8
16 - 25	04	74	03	60	07	134	141	49.6
26 - 35	18	212	14	191	32	403	435	73.5
36 - 45	15	88	07	71	22	159	181	121.5
46 +	06	42	05	31	11	73	84	130.9
Total	99	682	58	581	157	1263	1420	110.56

P value for sexes :

$\chi^2 = 4.63$, df: 1, OR = 1.45, $p < 0.05$

P value for both age and sexes

$\chi^2 = 27.86$, df: 15, $p < 0.05$

P value for age groups :

$\chi^2 = 20.7$, df: 5, $p < 0.001$

TABLE 2
Distribution of domestic accident (DA) according to educational status

Educational status	No. affected with DA	No. not affected with DA	Total	Rate per 1000 person year
Up to 5 standard	50	279	329	151.97
6 - 9 standard	27	244	271	99.63
10 - 12 standard	31	362	393	78.88
Graduate	11	143	154	71.42
Post graduate	05	69	74	67.56
Total	124	1097	1221 *	101.55

$\chi^2 = 13.81$, df: 4, $p < 0.01$

*Children below 5 years are excluded

TABLE 3
Distribution of domestic accident as per family income

Family income per month (Rs)	No. affected with DA	No. not affected with DA	Total	Rate per 1000 person year
Less than 1000	17	83	100	170.0
1001 - 1400	94	715	809	116.1
1401 - 1800	41	396	437	93.8
1801 - 2200	05	55	60	68.8
2201 +	—	14	14	—
Total	157	1263	1420	110.56

$\chi^2 = 6.53$, df: 3, $P > 0.05$, NS (Rows 4 and 5 are pooled for χ^2 analysis)

(21.66%), bathroom (17.2%) and kitchen (14.01%). Large proportion of moderate and severe injuries occurred in the garden. Majority of the accidents (49.04%) occurred between 1400-2000 hours. Large proportion of moderate and severe injuries also occurred during the same time period.

Predisposing factors (PF) were present in 55% of the families of which 25.2% were affected with DA (Table 4). On the contrary 45% of the families were free from PF of which only 14.1% experienced DA. The difference is statistically significant.

Discussion

The study revealed that the overall incidence of DA

TABLE 4
Distribution of domestic accidents according to prevalence of predisposing factors (PF)

Predisposing factors	No. of families affected	No. of families not affected	Total
Present	91 (25.28)	107 (29.72)	198 (55.00)
Absent	51 (14.17)	111 (30.83)	162 (45.00)
	142 (39.45)	218 (60.55)	360 (100.00)

$\chi^2 = 7.81$, df: 1, $p < 0.05$, OR = 1.85, Figs in the parenthesis indicate percentage

was 110.56 per 1000 per year with a statistically significant bimodal distribution above the average in under 15 and above 36 years age group. The incidence is lower than 174 per 1000 per year as documented by Luthra et al [5] in a similar study carried out in an Army community. The difference appears to be due to better housing facilities, higher literacy status and greater accident awareness in the present community. US National Health survey has reported an annual incidence of home accidents as 114 per 1000 population [6]. A WHO reappraisal study has reported an annual incidence of 121.2 DA per 1000 population in six large conurbations of Eastern Europe [7]. The highest incidence was found in 0 to 5 years age group and this correlates well with the findings of other studies [7,9]. Luthra et al [5] found the highest incidence in 6-15 yrs followed by 0-5 yrs age group. Other studies [5,7] have also documented a bimodal distribution of DA which substantiate the finding of present study.

The males were more affected (126.7 per 1000 per year) than females (90.7 per 1000 per year) and the difference is statistically significant. Studies from

abroad also documented a higher incidence of DA among boys (57.14%) than in girls (42.36%) [9]. Osuntogun et al. (8) reported a higher rate of home accidents among males who were even over-represented by fatality as compared to females.

Highest incidence of DA (15.97 per 1000 per year) was seen among subjects educated up to five standard. The incidence decreased with increase in literacy status and the same is statistically significant. Nurminen [7] in his reappraisal studies of home accidents reported that educational status of population is inversely related to occurrence of accidents at home. He further pointed out that education modifies personal, attitudinal and economic factors that largely contribute to home accidents.

Highest incidence of DA (170 per 1000 per year) was seen in the lowest income group. The incidence decreased with increase in monthly family income. Gordon [10] stated that socio-economic factor exerts its inference on accident through host, agent and sometimes the mechanism which determines their interaction. Lishman [11] documented inverse relationship between economic status and home accidents. The association may perhaps be related to overcrowding, poor housing and poorly maintained home appliances.

Among the DA, fall was the commonest (54.1%) and burns constituted 5.7% of the accidents. Among injuries, abrasion was frequent (40.7%). The findings correlate well with the findings of other study [5] except for incidence of burns which was lower than as reported by Luthra et al [5]. This is possibly due to easy availability and intensive use of LPG cylinders in the present community.

Majority (57.3%) of DA were moderate, 31.8% were trivial and 10.8% were severe. Commonest place of accident was garden/compound. Most of the DA (49%) occurred in the afternoon followed by morning (22.9%) Other studies [5,7] reported open compound to be commonest site of home accident followed by kitchen and bed rooms. Luthra et al [5] also documented 50% of the DA occurring in the afternoon, followed by 40% in morning and 10% at night.

The study revealed that DA occurred more often in families having certain predisposing factors in their immediate environment and the association is statistically significant. Gordon [10] stated that causative agent for DA is to be considered against environmental back ground which contains situation representing varying degrees of risk of an accident. How-

ever definite identification of such risk factors is often unsatisfactory because of common failure to distinguish the actual mechanism.

15 (4.17%) families reported more than one DA during the study period. This is perhaps attributable to their belonging to lower socio-economic group and large family size (5.2) as compared to average (3.94) family size in present community.

Domestic accidents are preventable. Various environmental factors can be identified in a community and suitable safety education can be imparted to the vulnerable group. This is a limited study and was basically carried out to ascertain the incidence and various factors associated with DA. Further community studies are needed to substantiate these observations and to create awareness regarding prevention of DA among the community members.

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