Domestic Injuries and Physical Agents: A Disregarded Health Issue among Housewives in Raipur, India

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ABSTRACT

Introduction: Housewives perform various household works both inside and outside the home, which may cause domestic injuries and ill health. Domestic injuries are usually sustained due to exposure to various physical agents. The objectives of the current study were to find out the various physical agents, the prevalence of various types of domestic injuries & to find out the association between domestic injuries and selected physical agents.

Methods: In this study 500 housewives aged more than 18 years from villages of Raipur, Chhattisgarh were selected by multistage stratified random sampling. Demographic information, the occurrence of domestic injuries, and the factors associated with injuries were collected by questionnaires, interviews, and observation technique. Collected data were analyzed by using SPSS 16 statistical package.

Results: Results showed that the mean age of housewives was 39.27 (±12.07) years and the majority of them were between 22-35 years of age group. Data revealed that 59% of housewives had suffered from domestic injuries. Out of them, the majority were suffering from vision problems (45.1%) and headache (36%), 21% suffered from heat, 15% got cut and 14.8% had fire burn from home environment. Around 14% got eye irritation and 12.8% of housewives had experienced falls on the floor. A significant association was found between injuries and physical agents.

Conclusion: The study concluded that housewives are exposed to various physical agents in their own homes, which contributes to the prevalence of various types of domestic injuries among them. Housewives themselves and family members have to be aware of those physical agents present in their home which silently affecting their health.

Key words: Domestic Injuries, Housewives, Physical agents, Relative humidity, Vision problem
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Introduction

Housewives are involved in various domestic chores in their daily life. Their general routine and lifestyle

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pose several threats and leads to domestic injuries. Generally, women's works at home are numerous but not recognized. They are usually involved in various household work both inside and outside the home, which causes accidents and ill health. Apart from their strenuous domestic chores, rural Indian women are engaged in different agricultural works too.

While working at home, three types of interaction occur between housewives and the environment. These are physical agents, chemical agents, and mechanical agents. Few examples of physical agents are heat, cold, humidity, noise, light, vibrations, etc.; chemical agents are like cleaning solutions, acids to clean

floor or toilet; mechanical agents are those machines housewives use frequently at home as mixer grinder, knives, or other sharp instruments, rice cookers, toasters, etc.[1]

The house is principally seen as a zone of solace from the rest of the world which is also accepted to be the place for accidents. A household accident may occur inside the house, as well as in the surroundings which is one of the four significant reasons for death on the planet. Domestic accidents are probably going to happen because of steady activities in homes and their environs at which different home appliances are constantly used. Accidents at home never ought to occur, they are constantly brought about by preventable mistakes.[2]

In some European nations, accidents at home exterminate a greater number of individuals than on street. The Large Analysis and Review of European lodging and wellbeing Status study of the WHO Regional Office for Europe detailed cuts as the most common accident followed by falls and burns.[3]

The important reasons for significant domestic accidents are:
• Individuals' cognitive failure or un-mindfulness at Kitchen, most particularly working at gas.
• Uncovered and unattended Electrical Connections, Electrical associations could likewise be hazardous and have a lethal endpoint.
• Poor Sanitary Maintenance as wet floors, litter around the house can cause hazards as an individual could slip and fall hitting on a hard edge.[4]

A previous investigation had discovered a casualty pace of 31.58% among females at household work.[4] Another report on the domestic accident at Imphal, India recorded 287 domestic accidents with a 68.3% annual incidence rate. Cuts and lacerations (57.1%) were the most well-known hazards experienced followed by falls (18.5%), burn, and scald (13.6%). The investigation detailed no disability and mortality coming out from these domestic accidents.[5]

In a developing nation like India information about the domestic injury is poor. Domestic injuries are a significant general health problem and the issue is graver in rural India. Domestic injuries are one of the five driving reasons for death in industrialized and developing countries.[6] This current investigation was led to discover the various physical agents, the prevalence of various types of domestic injuries & also to find out the association between domestic injuries and selected physical agents among the Indian Rural Housewives.

Methods

An exploratory and descriptive cross-sectional study with a quantitative approach was performed among 500 housewives aged more than 18 years from villages of Raipur, Chhattisgarh, India.

In the present study, the probability sampling (multistage stratified random sampling) technique was used to select the areas of Raipur. Every second house was chosen for data collection. If no housewife was found in that house, then the next house was selected. Inclusion criteria for this study were i) women who were housewives, ii) housewives who gave written consent to participate in the study, and iii) housewives who could understand Hindi, and the exclusion criteria were; housewives who came from another district rather than Raipur.

Data on demographic information, the occurrence of domestic injuries, and factors associated with injuries were collected by questionnaires, interviews, and observation techniques.

Physical parameters were measured by the instruments like measuring tape, weighing machine.

Factors causing domestic injury were measured by the mentioned instruments, i) Lux meter was used to measure illumination, ii) noise level was measured by the sound level meter, and iii) relative humidity and the room temperature was measured with an anemometer.

The content validity of the tools was ensured by giving them to seven experts (CVI ≥ 0.7). The reliability of the instruments was checked by administering to 20 samples (r ≥ 0.8).

Data were analyzed based on the study objectives using descriptive and inferential statistics (SPSS 16).

Results

Results showed that the mean age of housewives was 39.27 (±12.07) years and a majority of them were between 22-35 years of age group. Maximum women were with a mean weight and height of 47.88 (±6.23) Kg and 152 (±5.54) cm respectively with a mean BMI of 20.71 (±3.2). BMI denotes that the majority (60.6%) had normal weight. Only 7 % fall under pre obesity and 32.4 % were underweight.

This current study found that the mean illumination of the living room was 46.3 LUX (±38.29) (range 10 – 188 LUX) and 63.69 LUX (±79.38) (range 10 – 487 LUX) at the kitchen. Fig. 1 denotes that 93.6% of the living room as well 98.4% of the kitchen of this community had low illumination.[7]

Table 1 shows that the mean noise level was 56.89 (±8.5) dBA in the bedroom, 64.24 (±11.51) dBA in the living room, and 55.54 (±7.8) dBA in the kitchen. It was also found that high sound level (100%) in the bedroom (>25dBA) and living room (>40 dBA) whereas at kitchen sound level was normal (100%) i.e., within 40-90 dBA as per the standards.[8]

Table 2 and Figure 2 shows that mean relative humidity was 36.81 (±8.366) % at a mean temperature of 41.3⁰C (±3.349) which refers to hot (100 %) and dry (64.6%) kitchen environment.

Table 3 denotes that around 50 % (45.2%) house was not as per standards[7] i.e.; no. of rooms was not adequate as per the no. of members residing at that house. In 63.4% of the house, there was no adequate natural light even artificial light was also not sufficient (54.8%). In 86.4% of houses, there was no cross ventilation, even there was no window in the bedroom.

Fig. 3 and Fig. 4 show that 59% of housewives had suffered from domestic injury. Majority of them was suffering from vision problem (45.1%), 36% had a headache, 21% suffered from heat, 15% got cut and 14.8% had fire burn from home environment. 13.8% also got eye irritation and 12.8% of housewives had experienced falls on the floor.

An Independent t-test was done to find out the association of various domestic injuries with selected physical agents at the level of 0.05 level of significance. Significant associations of cut, laceration, vision problem, hearing problem, headache, eye irritation with selected physical agents have been displayed in table 4.

Table 1: Average Noise Level of the existing rooms (n=500)

Variables	Minimum	Maximum	Range	Mean (SD)
Bed Room	34	89	55	56.89 (±8.5)
Living Room	45	97	52	64.24 (±11.51)
Kitchen	40	77	37	55.54 (±7.8)

Table 2: Description of Relative Humidity & Temperature at Kitchen (n=500)

Variables	Minimum	Maximum	Range	Mean (SD)
Relative Humidity (%)	23.00	56.00	33.00	36.8 (±8.366)
Temperature (⁰C)	35.5	62.4	26.90	41.3 (±3.349)

Table 3: Description of other physical agents (n=500)

Variables	Yes		No	
	f	%	f	%
No. of rooms as per standards	274	54.8	226	45.2
Presence of adequate natural light	183	36.6	317	63.4
Presence of adequate artificial light	226	45.2	274	54.8
Windows situated as cross ventilated	68	13.6	432	86.4

Table 4: Association between various domestic injuries with selected physical agents n=500

S.N.	Physical agents	Domestic Injuries	Mean	SD	df	t- value	p-value
		Cut					
1	Illumination at living room	Yes	29.5	31.02	498	-3.15	0.002*
		No	48.0	38.57			
2	Noise level at living room	Yes	58.94	11.75	498	-3.312	0.001*
		No	64.78	11.37			
3	Noise level at Kitchen	Yes	58.58	9.43	498	2.778	0.006*
		No	55.24	7.58			

S.N.	Physical agents	Domestic Injuries	Mean	SD	df	t- value	p-value
4	Relative Humidity at Kitchen	Yes	34.21	7.85	498	-2.22	0.027*
		No	37.07	8.37			
5	Temperature at Kitchen	Yes	42.29	3.26	498	2.123	0.029*
		No	41.16	3.34			
Laceration							
6	Noise level at living room	Yes	70.83	13.84	498	2.098	0.036*
		No	64.07	11.41			
Fall							
7	Noise level at Bed Room	Yes	51.97	6.99	498	-3.812	0.0001*
		No	57.31	8.50			
8	Noise level at Living Room	Yes	59.23	9.24	498	-2.851	0.005*
		No	64.67	11.60			
9	Noise level at Kitchen	Yes	61.35	2.99	498	4.936	0.0001*
		No	55.05	7.91			
Vision Problem							
10	Illumination at living room	Yes	35.87	12.04	498	-3.79	0.0001*
		No	50.24	16.05			
11	Illumination at Kitchen	Yes	32.66	11.64	498	-5.5	0.0001*
		No	75.42	7.22			
Hearing Problem							
12	Noise Level at Kitchen	Yes	48.9	10.43	498	-3.376	0.001*
		No	55.72	7.67			
13	Relative Humidity at Kitchen	Yes	42.38	6.74	498	2.342	0.02*
		No	36.67	8.36			
14	Temperature at Kitchen	Yes	38.9	1.56	498	-2.489	0.013*
		No	41.32	3.36			
Headache							
15	Illumination at living room	Yes	53.17	37.48	498	2.139	0.033*
		No	44.36	38.33			
16	Illumination at Kitchen	Yes	79.54	68.9	498	2.38	0.018*
		No	59.24	81.62			
17	Noise level at living room	Yes	58.78	9.69	498	-5.817	0.0001*
		No	65.78	11.53			
18	Noise level at Kitchen	Yes	57.0	10.01	498	2.224	0.027*
		No	55.13	7.04			
19	Relative Humidity at Kitchen	Yes	39.2	8.66	498	3.425	0.001*
		No	36.14	8.17			
Eye Irritation							
20	Illumination at living room	Yes	31.86	19.74	498	-2.559	0.0118*
		No	47.58	39.34			
21	Illumination at Kitchen	Yes	43.67	76.12	498	3.281	0.001*
		No	60.26	78.9			
22	Noise level at living room	Yes	59.64	8.44	498	-2.751	0.006*
		No	64.70	11.65			
23	Noise level at Kitchen	Yes	67.71	3.61	498	11.922	0.0001*
		No	54.44	7.13			
24	Relative Humidity at Kitchen	Yes	40.98	13.27	498	3.403	0.001*
		No	36.43	7.68			

Test of significance- Independent t-test at 0.05 level of significance; *Significant
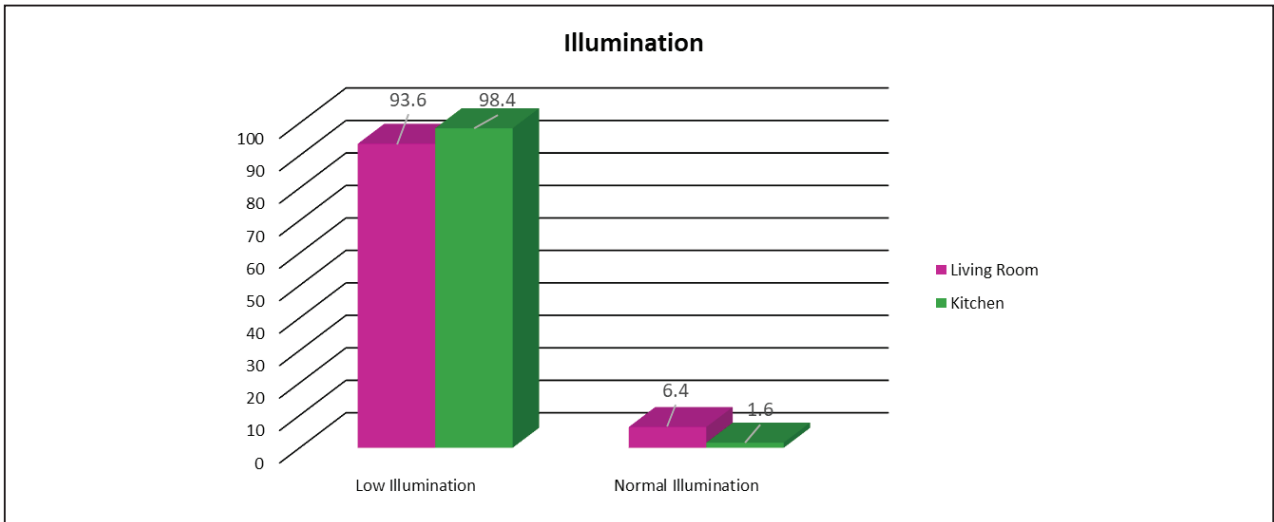
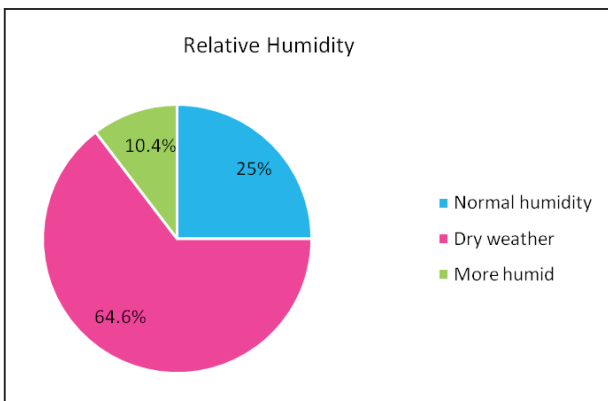**Figure 1:** Percentage distribution of Illumination in the living room and Kitchen

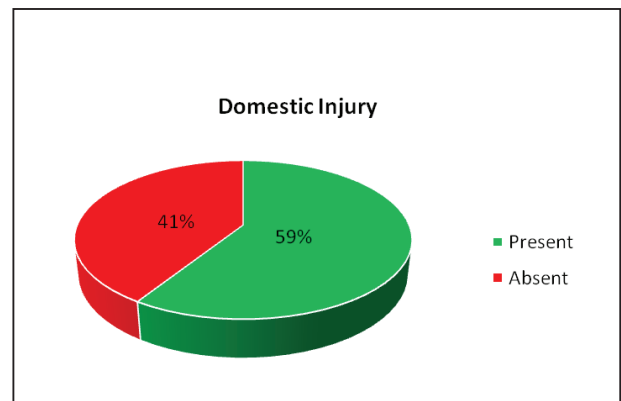**Figure 2:** Percentage distribution of humidity in the living room and Kitchen

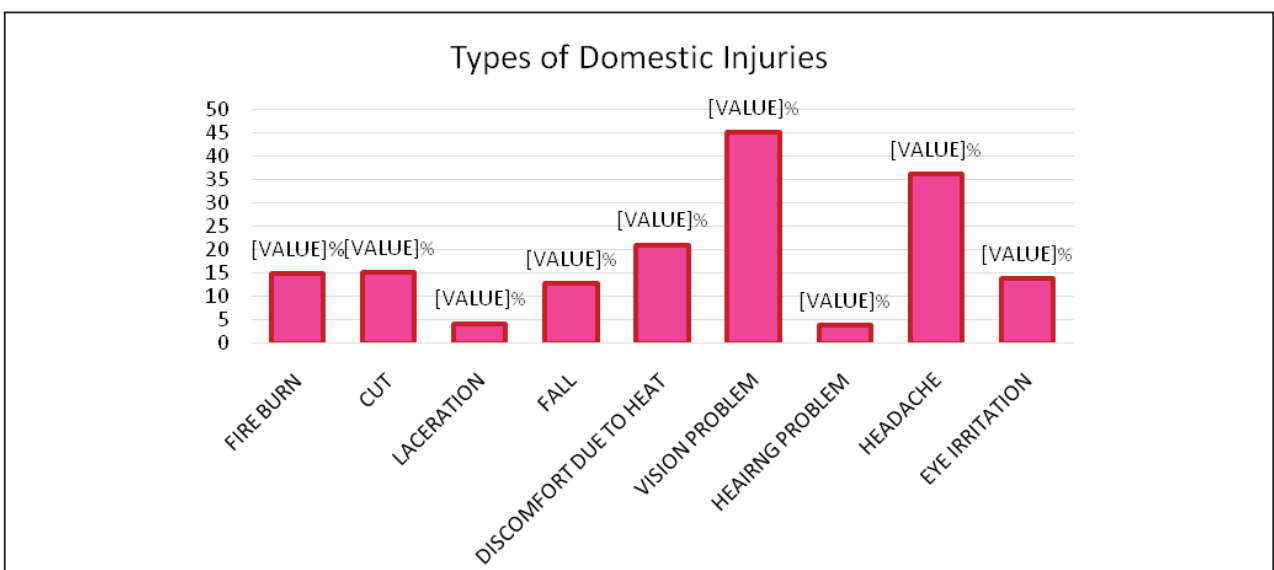**Figure 3:** Pie diagram showing the percentage distribution of domestic injury

Figure 4: Types of domestic injuries

Discussion

The current study has found that a major number (59%) of housewives had suffered from various domestic injuries. The majority of them were suffering from vision problems (45.1%), headache (36%), and 15% got cut and 14.8% had fire burn incidents. Eye irritation (13.8%) and fall on the floor (12.8%) were the other two common accidents found among these housewives.

A study by Hmingthanzuala et.al in 2011, showed some similar household injuries like cuts and lacerations (57.1%) as the most common accident followed by falls (18.5%), burn and scald (13.6%).[5] The present study also encountered cuts and lacerations (19.4%), fall (12.8%) as common injury at home.

Troup et. al (1981) mentioned that while working at home 3 types of interaction occurs between housewives and the environment. Those are physical agents, chemical agents, and mechanical agents. Physical agents are heat, cold, humidity, noise, light, vibrations, etc.[1] This study supports the findings of the present study as in terms of factors causing domestic injury assessed were the physical agents, chemical agents, and mechanical agents only. This current study has found a significant association of cut with illumination in the living room (p=0.002), the noise level in the living room (p=0.001), the noise level in the kitchen (p=0.006), relative humidity in the kitchen (p=0.027), and temperature in the kitchen (p=0.029) which denotes that these physical agents are the potential risk factors which may cause cut or other household injuries among housewives.

The present study found a high sound level (100%) in the bedroom (56.89 dBA) and living room (64.24 dBA). Occurrences of laceration were found significantly associated with the noise level in the living room (p=0.036). Fall was associated with the noise level in the bedroom (p=0.0001), the noise level in the living room (p=0.005), and the noise level in the kitchen (p=0.0001). It has been found (Julie Hatfield 2002) that, workers who those been exposed to occupational noise, affect their cognitive task performance. The cognitive and motivational parameters of an individual impair due to environmental noise. There was some significant evidence for emotional disturbances such as depression and anxiety are the result of noise exposure at work.[9] Occupational exposure to noise had a potential risk factor to generate numerous adverse health effects.[10] Several studies have established the causal or contribute impact of occupational noise on the occurrence of various accidents.[11] Recent publications except one[12] suggest an exposure-response relationship between noise exposure or hearing impairment and accident risk.[13]

Low illumination is also a potential risk factor, it causes misjudgment of the position, shape, or rapidity of an object that can lead to incidents and injury. Quality of work, specifically in situations where precision is required overall productivity can reduce due to poor illumination. Eye strains, eye discomfort (burning, etc.), and headaches were found as the symptoms of exposure to poor illumination at the workplace.[14] Both qualitative and quantitative aspects of workplace illumination were considered by many researchers as the key factors determining the employees' productivity. The working promptness, excellence, interruptions, truancy, and accident rate were all affected by the environmental lighting conditions.[15] This study found 93.6% of the living room as well 98.4% of the kitchen of this community had low illumination. Significantly vision problem was associated with illumination at the living room and illumination at the kitchen (both p=0.0001). Factors causing headache were found as illumination in the living room (p=0.033) and illumination in the kitchen (p=0.018). Eye irritation was found significantly associated with illumination in the living room (p=0.0118) and illumination in the kitchen (p=0.001). Visual discomfort and physiological strain such as headaches, eyestrain, migraine, back pain, neck pain among housewives were primarily connected with inadequate lighting in the working place and most cases decrease work performance and efficiency.

Along with the above-mentioned causes hot (100%) and dry (64.6%) kitchen environment also affect housewives' physical performance. Many ecological studies have revealed that extremely hot weather contributes to excess morbidity and mortality in the community.[16]

Conclusion

The study concluded that housewives are exposed to various physical agents at their own home, which contribute to the prevalence of various types of domestic injuries among them. Housewives themselves and family members have to be aware of those physical agents present in their home and silently causing domestic injuries.

Acknowledgment

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