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Exploring the Awareness and Utilization of Electronic Safety Gadgets among Womens Safety with Reference to Erode District

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ABSTRACT: The study investigates the awareness and utilization of electronic safety gadgets among women in Erode District. With a focus on enhancing women's safety, the research aims to understand the level of awareness regarding electronic safety gadgets and their actual usage among the female population. Data was gathered from a representative sample of women across various demographics. Findings reveal the current landscape of awareness and usage patterns, shedding light on factors influencing adoption and barriers to implementation. The implications of these findings are discussed in policy recommendations and interventions aimed at bolstering women's safety in the region.

Keywords: Women safety, Electronic safety gadgets, Women safety awareness

I. INTRODUCTION

In recent years, the safety of women has become a critical concern, prompting the development and deployment of various electronic safety gadgets designed to enhance personal security. These gadgets, ranging from personal alarms to GPS-enabled devices, aim to provide women with tools to protect themselves in potentially dangerous situations. This study focuses on the awareness and utilization of these electronic safety gadgets among women in Erode district. Understanding the level of awareness and the extent to which these gadgets are used can provide valuable insights into the effectiveness of current safety measures and highlight areas for improvement in public safety initiatives.

IMPORTANCE OF WOMEN WOMENS SAFETY:

Safety is a fundamental human right. Ensuring women's safety upholds their dignity and autonomy. When women feel safe, they can fully participate in economic activities, contributing to the overall growth and prosperity of society. Safe environments enable women to pursue education and careers, fostering social progress and equality. Safety reduces stress promoting better mental and physical health for women. A safe environment empowers women to make decisions, participate in community life, and lead without fear of violence or harassment.

MAJOR TYPES OF ELECTRONIC SAFETY GADGETS AMONG WOMENS SAFETY:

1. Personal Alarms
2. GPS Trackers
3. Smartphone Safety Apps
4. Wearable Safety Devices
5. Pepper Spray and Stun Guns
6. Bluetooth Trackers

STATEMENT OF THE PROBLEM

Despite the availability of various electronic safety devices designed to enhance women's security, there remains a gap in understanding the awareness levels among women regarding these devices. The effectiveness of these devices in ensuring women's safety hinges not only on their availability but also on women's awareness of their existence, functionality, and accessibility. There is a need to conduct a study to assess the awareness levels of women regarding electronic safety equipment and identify factors influencing their awareness and utilization. By addressing this gap in knowledge, we can better understand how to promote the adoption and effective use of electronic safety devices among women, contributing to improved safety and well-being in our communities.



OBJECTIVES OF THE STUDY

1. To explore the demographics that may impact awareness levels.
2. To assess the current level of awareness among women regarding electronic safety device.
3. To identify the factors the type of which influence more for women's safety.

RESEARCH METHODOLOGY

RESEARCH DESIGN:

The descriptive research design was adopted due to the nature of the study.

SAMPLING TECHNIQUE:

Simple random sampling is used for analysis.

SAMPLE SIZE:

The sample of 100 women's is chosen in this study.

DATA COLLECTION:

- Primary data
- Secondary data

STATISTICAL TOOLS USED:

1. Simple Percentage Analysis
2. Factor Analysis

II. REVIEW OF LITERATURE

Rangaswamy et al.(2023). This paper presents the design and implementation of a wearable electronic safety jacket specifically tailored for women. The jacket incorporates various sensors such as GPS, accelerometer, and heart rate monitor to detect potential threats and monitor the wearer's health status. It also includes features like a panic button and automatic distress signal generation.

A Review on Wearable Technologies" by Hitha Shree Y S et al. (2023)This review article provides a comprehensive overview of wearable technologies aimed at enhancing women's safety. It discusses various wearable devices such as electronic jackets, smart jewelry, and personal alarms, highlighting their features, benefits, and limitations. The paper also discusses future research directions and challenges in this domain.

A Review on Women Safety Devices and Applications by Pragna B R et al. (2020)This review paper provides an overview of various women safety devices and applications available in the market. It discusses wearable devices, mobile applications, and IoT-based solutions designed to enhance women's safety and security. The review covers features, functionalities, usability, and effectiveness of these technologies, along with challenges and future prospects.

Smart Electronic Systems for Women Safety by S Shambhavi et al. (2019) This comprehensive review paper examines various smart electronic systems designed to enhance women's safety. It covers wearable devices, IoT-based solutions, and mobile applications equipped with features like real-time tracking, distress signal generation, and automated alert systems. The review discusses technological advancements, usability considerations, and effectiveness of these systems in different contexts.

Emerging Trends in Women Safety Technologies by M Nagaraja et al. (2020) The study explores emerging trends in women safety technologies, focusing on advancements in sensor technology, communication protocols, and data analytics. It discusses the integration of artificial intelligence and machine learning algorithms in enhancing the capabilities of safety systems, along with the role of user-centered design principles in improving usability and user experience.

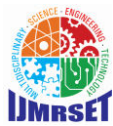


III. ANALYSIS AND INTERPRETATION

1. SIMPLE PERCENTAGE ANALYSIS

Table 1: Profile Of The Women’s Demographics

Details of the women’s demographics		No. of Respondents	Percentage
Age Group (in Years)	Below 20 years	25	25
	20 – 30	31	31
	30 – 40	24	24
	40 – 50	14	14
	Above 50 years	6	6
	Total	100	100
Marital Status	Single	28	28
	Married	31	31
	Separated	20	20
	Divorced	12	12
	Widowed	9	9
	Total	100	100
Educational qualification	Schooling	31	31
	Undergraduate	36	36
	Postgraduate	27	27
	Doctorate degree	6	6
	Total	100	100
Employment status	Unemployed	22	22
	Student	14	14
	Employee	37	37
	Homemaker	15	15
	Retired	12	12
	Total	100	100



Income level per month	Below 10000	34	34
	10000 – 20000	27	27
	20000 – 30000	16	16
	30000 - 40000	15	15
	Above 40000	8	8
	Total	100	100

INTERPRETATION:

The women’s participated in the survey are more respondents (31 percentage) are of age group 20 years to 30 years. This is followed by the age group of 30 years to 40 years (24 percentage) and below 20 years (25 percentage). Majority of the respondents are married (31 percentage). The women’s are UG was higher compared to other categories (36 percentage). Respondents with minimum qualification of schooling are (31 percentage). Most of the respondents are either post graduate (27 percentage), doctorate degree (6 percentage). A majority of the respondents (37 percentage) of women’s are employees and minority of the respondents are (12 percentage) of women’s are retired. A majority of the respondents (34 percentage) of income level are below ₹10000 and minority of the respondents women’s are (8 percentage) of income level are ₹40000 and above.

2. FACTOR ANALYSIS:

Influence and awareness level of women safety devices among female respondents by Using Servqual Scale through Factor Analysis

Women’s respondents are enquired with the servqual scale modified for the research. The responses are recorded in a five point likert scale ranging from ‘strongly agree’ to ‘strongly disagree’. The items in the scale with the variables studied are given in table 2.

Table 2: Awareness Level Of The Women’s Respondents (Scale Items)

Dimensions	Items in the Scale
1. Personal alarms	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
2. GPS tracking devices	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
3. Panic buttons	Strongly agree
	Agree
	Neutral
	Disagree



	Strongly disagree
4. Mobile safety apps	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
5. Safety whistles	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
6. Smart safety jewellery	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
7. Stun gun	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
8. Key chain alarm	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
9. Wearable safety lights	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
10. IOT Devices	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
11. Security cameras	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
12. Smart wallets	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
13. Voice activated devices	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree
14. Portable carbon monoxide detectors	Strongly agree
	Agree
	Neutral



15. Smart home security systems	Disagree
	Strongly disagree
	Strongly agree
	Agree
	Neutral
	Disagree
	Strongly disagree

- It is difficult for Women’s respondents are the awareness level of women safety devices among the electronic safety devices. Exploratory factor analysis is conducted to identify the major Women’s respondents are the awareness level of women safety devices. The results of the analysis are presented in the following tables.

TABLE: 3 Kmo And Bartlett’s Test For Respondents Of Women Safety Devices

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.586
Bartlett's Test of Sphericity	Approx. Chi-Square	228.675
	Df	105
	Sig.	.000

Sampling adequacy is sufficient enough to interpret the results of factor analysis as the Kaiser-Meyer-Olkin (KMO) measure is above 0.5. Chi-square test value of Bartlett’s Test of Sphericity is significant enough as the significance value is 0.000 which is lesser than 0.05 at 5 percent level of significance. Factors derived with principal component method with their squared loadings are presented in total variance explained table.

Communalities		
	Initial	Extraction
personal alarms	1.000	.637
GPS tracking device	1.000	.698
panic buttons	1.000	.580
Mobile safety apps	1.000	.536
safety whistles	1.000	.702
Smart safety jewellery	1.000	.727
stun gun	1.000	.708
Keychain alarm	1.000	.774
wearable safety lights	1.000	.594
IOT devices	1.000	.757
security cameras	1.000	.501
smart wallets	1.000	.626
Voice activated devices	1.000	.530
portable carbon monoxide detectors	1.000	.575
smart home security systems	1.000	.697

Extraction Method: Principal Component Analysis.

TABLE: 4 Total Variance Explained For Respondents Of Women Safety Devices

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.414	16.093	16.093	2.414	16.093	16.093
2	2.009	13.392	29.485	2.009	13.392	29.485
3	1.761	11.738	41.224	1.761	11.738	41.224
4	1.303	8.690	49.914	1.303	8.690	49.914



5	1.135	7.568	57.481	1.135	7.568	57.481
6	1.018	6.789	64.271	1.018	6.789	64.271
7	.849	5.661	69.932			
8	.772	5.148	75.079			
9	.715	4.765	79.844			
10	.641	4.276	84.120			
11	.590	3.930	88.050			
12	.555	3.701	91.751			
13	.501	3.341	95.092			
14	.375	2.500	97.592			
15	.361	2.408	100.000			

Total Variance Explained			
Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	1.732	11.547	11.547
2	1.635	10.899	22.446
3	1.604	10.693	33.140
4	1.596	10.637	43.777
5	1.583	10.554	54.331
6	1.491	9.940	64.271
7			
8			
9			
10			
11			
12			
13			
14			
15			

Extraction Method: Principal Component Analysis.

Total variance explained table explains that 6 factors are extracted as important from the 15 variables identified. The explanatory power of these variables to understand the expectations of women safety devices is to the extent of 64.271 percent. The factors identified are extracted by Varimax rotation and explained with the help of rotated component matrix.

Table: 5 Rotated Component Matrix For Respondents Of Women Safety Devices

	Component Matrix ^a					
	Component					
	1	2	3	4	5	6
panic buttons	.577					
Smart safety jewellery	.576					-.506
Voice activated devices	.558					
portable carbon monoxide detectors	.523					
smart wallets						
Mobile safty apps		-.547				
personal alarms		-.532				
GPS traking device						
security cameras			-.612			



stun gun			.595			
Keychain alarm			.505			
IOT devices				.635		
safety whistles						
smart home security systems						
wearable safety lights						

Extraction Method: Principal Component Analysis.^a

a. 6 components extracted.

Rotated Component Matrix ^a						
	Component					
	1	2	3	4	5	6
personal alarms	.791					
GPS tracking device	.775					
panic buttons	.525					
smart home security systems		.815				
Voice activated devices		.608				
security cameras		.508				
smart wallets			.780			
portable carbon monoxide detectors			.697			
stun gun				.796		
wearable safety lights				.683		
safety whistles						
Smart safety jewellery					.805	
Mobile safety apps					.603	
Keychain alarm						.845
IOT devices						.733

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

a. Rotation converged in 7 iterations.

The factors extracted are identified with the loadings (above 0.8) irrespective of sign, and are listed below in the order of extraction. These are the major women’s respondents are aware of these electronics safety device.

Factor 1: Personal alarms

Factor 2: Panic buttons

Factor 3: GPS tracking device

Factor 4: Mobile safety apps

Factor 5: Safety whistles

Factor 6: Smart safety jewellery

Awareness Level Of The Women’s Respondents in electronic safety devices as revealed in the factor analysis are:

Awareness of the women’s electronic safety devices with the servqual scale modified for the research. The responses are recorded in a five point likert scale ranging from ‘strongly agree’ to ‘strongly disagree’. It is difficulties for respondents of the women safety devices. Exploratory factor analysis is conducted to identify the major awareness of the women’s electronic safety devices. Total variance explained table explains that 6 factors are extracted as important from the 15 variables identified. The explanatory power of these variables to understand the awareness of the women’s electronic safety devices is to the extent of 64.71 percent. The major Awareness of the women’s electronic safety devices are: **Factor 1:** Personal alarm, **Factor 2:** Panic buttons, **Factor 3:** GPS tracking device, **Factor 4:** Mobile safety apps, **Factor 5:** Safety whistles, **Factor 6:** Smart safety jewellery



IV. CONCLUSION

The study on the awareness and utilization of electronic safety gadgets among women in Erode district reveals that while there is a growing recognition of the importance of these devices for personal safety. The findings indicate that while there is a moderate level of awareness about electronic safety gadgets among women, their actual utilization remains relatively low. This gap can be attributed to various factors, including limited access to these devices, lack of proper education on their usages. The study also highlights the need for targeted awareness campaigns, Educational initiatives and community outreach programs and training programs to enhance the understanding and effective use of these gadgets. Factors such as lack of awareness, and limited access to reliable information contribute to the gap between awareness and utilization.

Overall, improving the awareness and utilization of electronic safety gadgets can play a crucial role in enhancing women's safety and empowering them to navigate public and private spaces more confidently. Enhanced support from local authorities and increased availability of affordable safety devices could significantly improve the overall safety and empowerment of women in the district.

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