SafeWomen:
A Smart Device to Secure Women's Environment Using ATmega328 With an Android Tracking App

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ABSTRACT

The security of women is of prime concern around the world. Women feel insecure while traveling out of the home due to the fear of violence. The fear of violence restricts women's participating in different social activities. So instead of becoming a victim of a violent crime such as domestic violence, robbery, or rape, women should call on resources to help her out of that situation. In this paper, the authors develop a women safety device, namely SafeWomen, which helps in reducing the crimes held against women. This is a new approach for providing security to women in any unsafe situation by sending an alert having geographical location along with emergency message to the registered contact numbers so that the incident could be prevented. Also, it can track the current location of the victim just by knowing the IP address of the device she is using. One can also use this system for the safety and security of kids and elderly people just by making some changes in the functionality of the system.

KEYWORDS

Android, Arduino, GPS, GSM, Violence, Women Safety, Women Security

1. INTRODUCTION

Women security is the primary concern in India as well as around the world. According to the reports provided by WHO (World Health Organization) and NCRB (National Crime Record Bureau), 35% of Women all over the world are facing physical harassment in public places such as footpaths, bus stands, railway stations, lonely areas etc (Smith et al., 2008; Tiwari et al., 2014; Ryde et al., 2016; Gilchrist et al., 1998; Carcach et al. and Mukherjee et al., 1999; Chan et al., 2008; Stanko et al., 1996). Women feel insecure while travelling late at night due to the fear of violence or physical harassment (Bhilare et al., 2014). Their families and near ones get worried about their security. Everyone is aware of the importance of women safety, but we must analyze how they can be adequately protected. Even today in India, women can't go to crowded places in the daytime as well as at secluded places

Figure 1. Victimization by type of offence
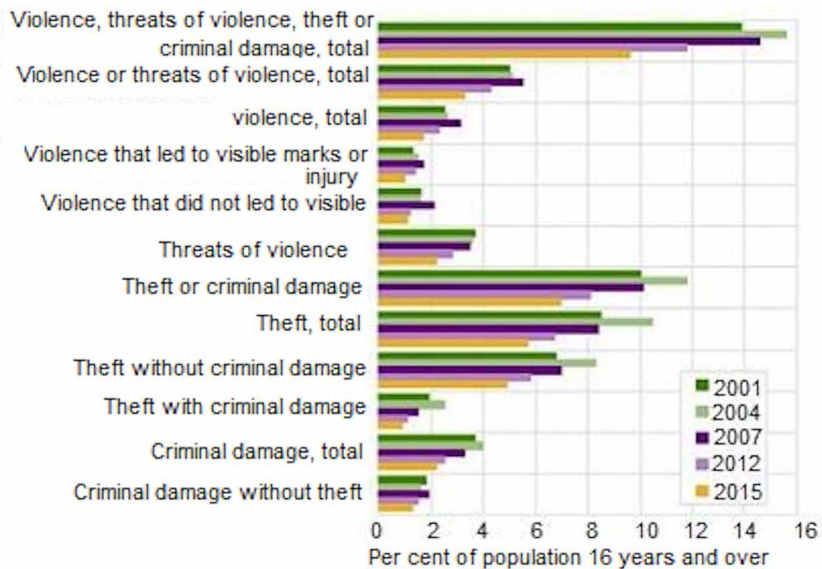
at night. The fear of violence restricts a woman's freedom and her ability to work and participate in different social activities.

According to the WHO report[1] published in March 2015, due to the growing recognition of violence against women (García-Moreno et al., 2013), the United Nations Secretary-General, Ban Ki-Moon, launched the *UNiTE to End Violence against Women* campaign. This UNiTE session emphasizes on the Status of Women and the causes and risk factors in order to prevent violence against women and provide different services for the victims and survivors.

In 2015, a survey[2] was conducted by Norway on living conditions which show that around 9.6% of the population above age 16 were the victim of incidents of theft or violence. It shows that around 4,00,000 of the adult population in the course of a year are subjected to these types of offence. Some of the results of the survey conducted on living conditions are shown in Figures. Figure 1 shows the victimization by the type of offence for the population aged 16 or over. Figure 2 shows the victimization by sex and age of people over age 16. This survey also shows that women are more often victims of threats of violence. As shown in Figure 2, women are more exposed to threats of violence than men. So the total distribution of violence and threats of violence among women is 3.6% while that for men is 2.9%.

According to the Personal Safety Survey on violence[3] conducted by Australian Bureau of Statistics, (The national survey of Australian 16,400 adults aged 18 years and over), since the age of 15 there were 19.10% of women had experienced sexual violence while 33.30% of women had experienced physical violence. Among these victims, only 81.10% of women who experienced sexual assault and 64% of women who experienced physical assault still did not report it to the police (Watson et al. 2015; Uma et al., 2015).

India is one of the fastest growing countries in the world in terms of economy and infrastructure. But the crime rate has also grown at a faster rate. Even today in India, women can't go out during the daytime at crowded places as well as at secluded places at night. According to different reports, the most unsafe cities for girls and women in India are Bengaluru, Delhi - NCR, Kolkata, Hyderabad, and Gurugram. It shows that the developed cities in India witness more crimes against women (Agrawal et al., and Agrawal et al., 2015). In Delhi - NCR, the violence or crime against women is a national issue. So, it's the collective responsibility of the society to build a safer and secure environment for

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