

# The role of locator bracelets in mitigating the risk of abduction and trafficking

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**Abstract.** The issue of missing children and elderly persons persists to date despite increasing security measures and the technological developments exhibited in recent years. This publication explores the significance of GPS-based locator bracelets in mitigating these risks. Children and older adults, due to their vulnerability and limited ability to discern danger, are particularly susceptible to abduction or getting lost, an issue that can be mitigated using locators. The locator bracelets can provide real-time monitoring of their location, ensuring their safety and enabling timely alerts to parents in case of emergencies. The publication also emphasizes the importance of parental attention, especially in today's busy society, where children often commute alone. By adopting locator bracelets, parents can proactively prevent potential dangers and quickly respond to unforeseen incidents. The article presents research findings, highlighting the prevalence of missing cases and the high effectiveness of locator bracelets in safeguarding children and the elderly. Additionally, the publication underscores the affordability, convenience, and peace of mind that these bracelets offer to families. The inclusion of a case study during travel further demonstrates their utility in crowded areas and unfamiliar environments.

**Keywords:** GPS-based locator bracelets, real-time monitoring, child safety, missing children and elderly, elderly safety.

## 1. Introduction

In recent years, despite increased security measures, the issue of missing children and elderly individuals continues to pose a significant concern in society. Vulnerable groups like children, especially those in primary school and preschool age, often lack the ability to distinguish right from wrong, and in cases end up entrusting individuals that treat them kindly. Tragically, some of these children end up being abducted and traded owing to their naivety and innocence. Even with stringent regulations, it is impossible for people to completely insulate themselves from such danger, therefore, being prepared for unexpected situations becomes crucial. In this case, having a ready-to-use locator bracelet for children can not only monitor their whereabouts but also ensure their safety, and in the event of danger, parents can be promptly alerted, thus, they can take immediate action to address the difficulties.

The need for increased parental attention in today's busy society has become more crucial. Research shows that children require heightened attention from parents, particularly in today's fast-paced society, where daily work routines often result in parents returning home late, typically between 7 and 8 PM [1]. This forces children to independently navigate their way home, exposing them to potential dangers

especially since they encounter countless of strangers along the way that may not necessarily have positive motives. Locator bracelets offer a preventive measure, empowering parents to avert potential risks [2]. For instance, in the event of an accident, immediate resolution can be sought, eliminating feelings of helplessness and empowering parents to further protect their children against such ‘unforeseeable’ circumstances.

The potential and relative benefit of the locator bracelets are quite evident when compared to alternative solutions. Locator bracelets provide an affordable and highly effective means of ensuring children’s safety [3, 4]. These bracelets facilitate real-time tracking of a child’s location, guaranteeing adherence to predetermined routes [4], therefore, any deviations from routines can be easily detected and communicated to parents and guardians, ensuring timely intervention. By adopting locator bracelet technologies, parents can proactively prevent potential dangers, granting their children the freedom to commute independently while maintaining a secure environment [5]. In fact, can also give parents some peace of mind given that they will know their child’s every step, to an extent that they can even give the children more autonomy to go home or to school without parental supervision as the locator can gives parent real-time tracking capabilities, facilitating the swift retrieval of lost or separated children [3, 5]. More or less, the safety of the children can always be guaranteed under such circumstances.

China has put in place well-articulated rules and regulations aimed at ensuring the society is generally safe for all; nonetheless, thousands of people and children still get lost every year. That is, by accident or being kidnapped by people with ulterior motives. For instance, in China alone, approximately 500,000 elderly individuals go missing annually, amounting to 1,370 individuals disappearing every day [6]. Similarly, reports suggest that about 200,000 children go missing in China each year, with a recovery rate of only 0.1% [7]. Among the missing elderly, 72% suffer from memory problems and related conditions, while 25% have been diagnosed with Alzheimer’s disease [6]. These cognitive impairments result in a gradual loss of memory, including forgetfulness of family members and their own addresses. Consequently, when approached for assistance, they are unable to provide useful information, leading to a significant number of unresolved missing cases [8]. Similarly, children, due to their immaturity, struggle to identify and resist dangers, making them vulnerable to deliberate trafficking. Moreover, parents often remain unaware when their children deviate from their usual routes or engage in unexpected activities. The underlying cause of many missing cases stems from the limited ability of these individuals to manage themselves independently, necessitating increased familial control.

Given such alarming statistics about missing persons, particularly children and the old, the locator bracelets present a cost-effective option to ensuring one always knows their location. I propose that the technology is adopted since it helps families to easily locate their dependents, including the young and the old that cannot effectively manage themselves at any one time. This location bracelet can help them to entirely eliminate such dangers efficiently and at a low cost. This device will be designed such that it will not make sound nor react to the extent of becoming detectible, however, it will act as beam that communicates the exact location when it gets too far from home or expected routes. It will not only provide information for the family, but also to police, allowing for swifter actions to be taken in case the person is in danger. As a result, it will effectively reduce the rate at which children and elderly persons get lost in China and beyond.

## **2. Research methodology, data collection, and preliminary findings**

Before proceeding to collect the actual data, the study first started by designing a simple experiment to demonstrate the practicality of the technology. This experiment involved younger children and older adults, given they are the population targeted by the technology. The research participants were randomly selected to reduce bias and ensure the results realized are insightful to warrant the second section of data collection. In this case, the participants were tasked with moving from one point to the other, and along the way designated research assistants would be tasked with luring them to change path or direction. This will confirm the gullibility and susceptibility of the study population that would lead them to get lost at any one time, and demonstrate why the bracelet will come in handy to ensure that one always knows the location of the individual. This means that the technology will provide real-time

access to the location of the children, thus ensuring the safety and well-being of the people and effectively reduce the total number of missing people.

The research further performed an empirical study involving parents, caregivers and guardians, as well as children. These personnel were administered with a questionnaire aimed at conforming whether they actually need the locator bracelet technologies in the future. 500 questionnaires were distributed within urban areas of Beijing, with both parents and children jointly participating in the data collection process. The survey encompassed several key inquiries. The first query explored participants' inclination to accept assistance from strangers. Subsequently, respondents were asked to indicate their willingness to accompany a stranger offering enticing food or recreational activities. The third question targeted parents, inquiring whether they would permit first and second-grade children to commute home unaccompanied. Lastly, parents were queried regarding their inclination to grant their children increased autonomy given access to real-time, precise location information.

The questionnaires administered solicited separate information from the children and the parents. Children responded to the first two questions as the parents responded to the last two. The study confirmed that the vast majority of the children, roughly 90%, were more likely to be enticed by strangers or even to ask for help from them. This alarming statistic indicates a heightened risk of child loss and trafficking, as children are inherently more vulnerable due to their physical disparities in weight and strength when compared to adults. Consequently, as children become more aware of safety precautions, it is imperative for parents to exercise heightened vigilance in ensuring their children's welfare. Employing electronic wristbands emerges as the most effective solution to addressing this concern.

The subsequent set of questions was intended for parents to provide their perspectives. A noteworthy majority of parents expressed concerns regarding the safety of their children. This apprehension stems from their children's young age, rendering them susceptible to getting lost or being approached by unfamiliar individuals. The adoption of a locator bracelet offers parents a heightened sense of reassurance. This device enables real-time tracking of their children's whereabouts and ensures their safety by promptly notifying parents via their mobile phones in situations where the bracelet is forcefully removed, or the child deviates significantly from their intended route home. This timely notification empowers parents to respond promptly and take appropriate action, thereby minimizing the likelihood of their children going missing. By incorporating a simplified removal alarm feature, the bracelet swiftly alerts surrounding individuals and simultaneously relays the last known location information to parents should an unauthorized attempt be made to remove the bracelet.

### **3. Explanations**

The light weight and portable design of the bracelet ensures ease of use without causing discomfort to the child. It includes an alert mechanism that notifies both the child and parents when the child ventures beyond their designated activity area. For instance, during the daily commute to school, parents may lower their guard, while certain children with resistance towards attending school may intentionally deviate from their prescribed route. The bracelet enables parents to promptly detect any route deviations, ensuring that their children remain safe and preventing the occurrence of potential mishaps. The locator bracelet is equally significant for the elderly population, who, like children, are vulnerable members of society. This bracelet aids in facilitating the safe return of elderly individuals to their homes. Particularly crucial for elderly individuals with impaired memory function, the real-time positioning feature of the bracelet allows their family members to receive immediate alerts if the elderly person ventures out alone or takes a wrong turn. This enables family members to swiftly intervene and prevent any accidents from befalling them. Many elderly individuals afflicted with Alzheimer's disease tend to wander alone due to lack of supervision, akin to infants, and are unable to discern potential hazards. Consequently, when an elderly person with memory loss roams the streets unaccompanied, they may inadvertently walk into traffic without paying heed to traffic signals, leading to potential tragedies. However, the positioning bracelet serves as an early warning system for families, providing them with the ability to avert such dangers altogether.

#### 4. Conclusion

GPS-based locator bracelets are an important tool in enhancing the safety and security and security of both kids as well as elderly people by offering real-time monitoring, making sure youngsters do not differ their designated paths and notifying moms and dads promptly in case of emergencies. Locator bracelets offer an affordable, convenient, and practical solution to address the persistent issue of missing children and elderly individuals. As society continues to prioritize safety and security, the adoption of locator bracelets emerges as a proactive approach that can help protect the most vulnerable members of our communities. Each year, numerous children go missing in various settings, including on their way home, during trips, and even at school. Similarly, cases of elderly individuals becoming lost, disoriented, and walking in the opposite direction of their home are distressingly common, making their movements unpredictable. In such circumstances, the positioning bracelet emerges as a dual solution, addressing both issues simultaneously. It not only allows parents to work with peace of mind, free from concerns about the safety of their children and elderly family members but also effectively safeguards the well-being of these vulnerable populations.

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