Personal Trackers: A Potential Aid to Home Quarantine in India

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INTRODUCTION

Enough evidences have been accumulated on the effectiveness of social distancing, quarantine, and case isolation as mitigation strategies for the Covid-19 pandemic.\(^1\,^2\) Nevertheless, quarantining an individual (primary contact, secondary contact, and high risk) is a mammoth task involving huge resources in terms of workforce, money, and material. Despite the huge efforts from governments all over the world, tracking quarantined individuals have definitely proven to be a major challenge in controlling this pandemic. Various methods have been adopted to quarantine individuals effectively which include mobile phone-based tracking, selfie updates on hourly basis, home visits every day (for the period 14 days), and utilization of other departments like law enforcement agencies to make sure that quarantining is maintained effectively.\(^3\,^4\) These methods have led to many issues including shortage in personal protective equipment’s to doctors and other healthcare workers, stress and fear among the frontline community health workers, transmission of infection to the healthcare workers, violence against health care professionals and breech in the privacy of quarantined individuals’ attitude toward maintaining isolation.\(^5\,^6\) Hence, this commentary is put forth with a view that, the use of personal trackers (embedded in tamperproof wristbands) for quarantining individuals in such situation would be more effective in comparison with other methods adopted.

ABSTRACT

During this Covid19 pandemic, millions of people have been affected globally. Social distancing and quarantining have been the most important modalities adopted to control the transmission of the disease in the community. Government of India has laid down strict regulations for quarantining individuals and the efforts have definitely made a huge difference in controlling the spread of the disease so far. Nevertheless, in the current approaches adopted to home quarantine individuals, there are several drawbacks, which include violence against healthcare workers, shortage of PPE, and misleading of officials by the quarantined individuals, and these methods also would require huge manpower for its functioning. Hence, personal tracking of quarantined individuals using tamperproof wristbands could be a more efficient and cost-effective solution that could prove more advantageous to the current methods adopted.

Key words: Covid-19, Quarantine, Technology

Integrating the Solution into the Indian Health-care Delivery System

Although this solution has been tried in countries such as South Korea and China, it has not yet been implemented in India.\(^9\) Hence, an illustration of how this solution could be integrated into the existing Indian health-care system.

Once the DHO (District Health Officer) receives information regarding individuals to be quarantined through various sources, health worker can visit the individual’s home (only on the 1st day of quarantined period) and tag him/her with the wrist band (enabled with 5G sim and linked with individual’s ID in the Geo fencing and monitoring system). Health worker also collects relevant details of the individual, including contact number (both primary and secondary), address, ID, and location of house on map. This data are entered into the Geo-fencing system and the device is activated, through which the safe and buffer zones of the quarantined are defined. Furthermore, once activated, the quarantined individual’s tagged device will send real-time location. The location information is mapped in GIS as color-coded pin, which will be monitored by operators in District Health Office [Figure 1]. If quarantined individual moves from safe zone to buffer zone, Geo-fencing and monitoring system will send a notification (e-mail/call/sms/alert on dashboard) to District Health Office and makes automated call to the individual to warn against safe zone violation. Color coding on GIS will also change,
indicating safe zone violation and following this District Health Officer would share information with the concerned health authority to take appropriate action [Figure 2].

Advantages of Personal Trackers over the Existing Methods of Monitoring

Through this solution, personal protective equipment’s provided throughout the duration of quarantine period for monitoring purpose can be saved; community health workers would not further become a source of infection, spreading the infection to family members, patients (due to occupational exposure), and the general population; no breach would be there in the privacy of quarantined individuals as health workers do not visit the house daily; violence against healthcare workers can be addressed; manpower of healthcare workers and workers from other departments (like law enforcement agencies) working in collaboration to maintain quarantine can be diverted to more important work, also keeping in mind the upsurge in the requirement of health workers during the time of epidemic/pandemic. Furthermore, quarantined individuals would be more compliant with this solution compared to other methods tried, making the solution more effective.

In comparison to other methods by personal trackers, individuals can be tracked continuously irrespective of the time due to which they will not be able to mislead the health authority. Furthermore, no issues will be encountered as in the mobile phone tracking due to phones getting switched off during which the tracking would become difficult. This solution can also be integrated into the already existing healthcare system in India as demonstrated in Figures 1 and 2. The solution also is cost-effective (directly as it would reduce the requirement of PPE’s and reusability of the device with appropriate disinfection and indirectly by reducing spread of infection and maintaining effective quarantine), ethical, and suitable to Indian context where majority do not have access to smart phones/internet connectivity.

Challenges to Face

The continuous monitoring of the individuals may raise concerns about the ethical competency of the approach. However, considering the crisis situation, the public health system can justify the use of such innovations. The training of peripheral health workers in using the technology and the cost of initial investment can also be a challenge.
CONCLUSION

Personal trackers can definitely be tried as an important modality to quarantine individuals to prevent transmission of disease in the situation of pandemic especially because it could easily be integrated into the system already existing in India and the advantages that this solution would bring.

REFERENCES