

Mass Adoption of a Medical Emergency Identification System (MEIS) – The Case of Chinese Consumers

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ABSTRACT An online survey was conducted among a snowball sample of 526 Chinese consumers to explore their knowledge of and attitude towards a Medical Emergency Identification System (MEIS). The respondents' knowledge, perceived importance and design preference of a MEIS was explored. Although their knowledge of MEISs was extremely low, perceived importance was very high, and they were more likely to use a MEIS for their parents who were older than 55 years, than for their children under 18, or even for themselves. An electronic MEIS like a wristband was preferred over static information designs. A strategy to promote the mass adoption of a MEIS in China should focus on creating wide-spread awareness and knowledge about the purpose of a MEIS. Key areas to highlight would be the vulnerability of elderly parents; the protection of young children; the consequences of the hospital "pay-or-die" policy; and the facilitation of treatment of medical emergencies.

INTRODUCTION

The thought of being unconscious, alone and unidentifiable in a medical emergency is a matter of great concern and could be distressing for the individual and family members. A medical emergency identification system (MEIS) could assist in identifying an unresponsive person, provide contact details of their loved ones, and personal information that can facilitate their treatment in an emergency. The primary function of a MEIS is to facilitate the notification of a person's loved ones in the event of a medical emergency where the individual is unable to speak for themselves. The purpose of such notification would serve to render emotional support for the casualty and extend practical interventions to promote their medical treatment, such as the provision of medical history records and medical payment guarantees (ACEP 2017).

Most people would want to carefully plan and prepare for any medical related hospital admission, whose preparations may include notification of family and friends, documenting medical history, and financial planning. However, it is difficult to predict when anyone will require emergency medical attention because an emergency by definition is "an unexpected event. Patient treatment can be delayed or compromised due to the unavailability of important medical

and personal information such as past medical history, current medication usage, known allergies, blood group, and medical insurance details (Torrey 2010). Despite the aforementioned, adoption rates of MEISs are extremely low (7).¹ Harries (2008) as cited by Law and Govender (2016), states that some of the more irrational approaches used by individuals to manage risk include "denial" and "enduring". A study conducted on risk and uncertainty concluded that while "risk experts" make use of specialised knowledge to manage uncertainty, the average individual's response to uncertainty appears to be grounded in their own experiences and cultural perceptions, and could be viewed as non-rational or in-between strategies.

There were 2.2-billion recorded outpatient visits to government hospitals across China during 2011, of which 89-million were classified as emergency cases (National Bureau of Statistics China 2012). In an interview, Dr. Xu Han, a Shanghai based medical doctor, stated that "while it is not written policy, patients who remain unidentified in hospital without the guarantee of payment for medical services will only receive basic medical care" (Han 2013). The aforementioned went on to explain that this medical care would only include basic emergency drugs and limited ongoing treatment if extended hospitalisation is required. Furthermore, the

aforementioned also stated that it was extremely unlikely that surgical interventions would be undertaken without authorisation from the patient or a relative.

The main problem identified in this paper, is the apparent absence of a commercially available MEIS in China, since the researchers have not been able to ascertain the existence of any such instrument (Dua et al. 2013). This was further corroborated by Dr. Jun Zhou a Guangzhou based doctor, Dr. Xu Han a Shanghai based doctor, and Ms. Zona Yim a director of a China based pharmaceutical company (Zhou 2014). Since there is no known commercial MEIS in China which has a population of 1.35-billion people (CIA 2104), this paper explores the awareness and perceived importance of a MEIS by the Chinese population, as well as determines the product design features that would appeal most to the broader Chinese population.

Objectives

In light of the above the aim of this paper was to broadly explore Chinese citizens' knowledge of and attitude towards a MEIS, so as to inform a strategy to promote its mass adoption in China. In addressing the research problem, the following objectives were considered, namely, to determine the citizens' knowledge of a MEIS, and their perceived importance of a MEI; to establish the MEIS product design that would appeal most to the broader consumer market, and to explore a strategy to promote the mass adoption of a MEIS in China.

The Research Context

In the context of China, the importance of a MEIS can be viewed under three broad categories. Firstly, China's "one-child policy" (OCP) which has resulted in highly protected children, and an increased burden of responsibility on the single child to care for their aging parents. Secondly, the extent of medical emergencies being experienced in China. Thirdly, the structure of the current healthcare system which most often requires the patient to provide insurance or to pay upfront in a medical emergency (Cameron et al. 2013).

China offers a unique context with regard to the use of a MEIS; primarily because of its One Child Policy (OCP) which was implemented in

1979, and resulted in over ninety percent of all births since the 1990s being single children (Feng et al. 2014). This has contributed to two specific areas where a MEIS could perform an increased role. Firstly, single children are more dependent on their parents, and the parents are more vigilant of their children. Secondly, the low birth rate will result in China having one of the oldest populations in the world by 2050 (Feng et al. 2014). In addition, there are many other situations where MEISs could play an important role in China, including medical emergencies and navigating the medical system.

Chinese media have commonly referred to the off-spring of the OCP as the "Little Emperor Syndrome" due to the perception that these children are self-centred because of the constant focus of their parent's attention. Cameron et al. (2013) concluded that OCP children were significantly less likely to take risks and also significantly less competitive than those with siblings born prior to the OCP. One reason being that parents of OCP children are far more protective and conservative in raising their single child (Carsten 2015).

After school hours, children spend time on public transport; cycling and walking the streets; wondering around shopping malls, and pursuing a variety of activities where they may be vulnerable without identification. In July 2012, it was estimated that there were over 233-million children under the age of 15 years living in China (Index Mundi 2015), and many are left behind in rural villages with extended family, while their parents moved to larger cities to find employment. A study conducted in 2000 by Duàn and Zhòu (2005) and cited by Law and Govender (2016), revealed that twenty-three percent of children under the age of 15 were classified as "left behind". MEISs could play an important role in satisfying these parent's concerns over the safety and well-being of their children.

China's OCP has also resulted in an increasing proportion of elderly people and an increase in the ratio between elderly parents and adult children. It was estimated that there were over 122-million people over the age of 65 living in China in July 2012 (Index Mundi 2015). This issue has been named the "4:2:1" phenomenon, referring to each couple being solely responsible for the care of four parents and one child (Hesketh et al. 2005 cited by Law and Govender 2016). In an attempt to limit the cost of caring for

senior citizens, the Chinese government passed a law that came into effect on 1 July 2013, allowing elderly parents to sue their grown-up children who don't visit them often enough (Fellman 2013). The aforementioned explains that in the past, children traditionally lived with their parents and looked after them in accordance with Confucian beliefs that emphasized filial piety as the foundation of all values, and placed great importance on harmony and hierarchy in family relationships. This has changed in recent years as China's OCP increased the burden of responsibility on the single child, causing many children to move away from their parent's homes and into the cities in pursuit of better jobs to support their aging parents (Fellman 2013). The elderly have therefore become more isolated and vulnerable. This is evident from a 2007 study by Fçng and Qián (2008) conducted in Shanghai, which reported that 84.95 percent of all emergency hospital cases involved patients above 60 years of age.

Medical Emergencies in China

In 2011, the Chinese completed a total of 2.6-billion out-of-town and overnight trips, of which 70-million were to international destinations (Digital Luxury Group 2012). By the end of 2013, international travel had increased to 98-million trips and more than twenty thousand Chinese enterprises were operating across nearly two hundred countries and regions (Li and Zhang 2014). Due to the rising need for overseas consular assistance, the China's Department of Consular Affairs announced that they would set up a worldwide 24-hour hotline telephone number during 2014 to assist Chinese citizens abroad (Liebman 2013). This was in direct response to the more than 42 000 consular assistance cases that were handled during 2013 (Li and Zhang 2014). MEISs can also play an important role in identifying and assisting casualties who are travelling either domestically or internationally, or even living abroad.

Commuting raises the risk of a person being unidentified in the event of a medical emergency because they are away from their home, or workplace, or the surroundings of familiar people. One study in Shanghai reported that 15.8 percent of occupational injuries took place whilst going to or coming from work (Perry et al. 2005 cited by Law and Govender 2016). In Shanghai

alone, 6.23 billion train and bus commuter trips were completed during 2012 (Shanghai Municipal Statistics Bureau 2013). By the end of 2011, the total number of registered motor vehicles across the entire country had grown 8.7 percent year on year, to 225 million (Traffic Management Bureau 2012). In addition, a further 470 million bicycles and 120 million e-bikes lined the streets of China (Arabic Knowledge@Wharton 2011). While road accidents are commonly settled financially on the spot and every effort is made to avoid involving the police, there were still 210,812 formally reported road accidents in China in 2011 (Hays 2012). According to a global road safety report by the WHO, there were 70,134 road deaths recorded in China during 2010, of which thirty-five percent related to pedestrians or cyclists (Toroyan 2013).

In 2004, a study was conducted into 15,611 traumatic brain injury patients from 80 hospitals across East China. Traffic accidents accounted for 60.4 percent of these incidents (Hu et al. 2008). Another study was carried out into the characteristics of traffic injuries treated in Beijing from 2004 to 2009. Head and neck injuries were sustained in thirty-five percent of cases, and pedestrians were involved in forty-nine percent of the instances (An et al. 2012). Pedestrians are particularly vulnerable because unlike motor vehicle accidents, there is no vehicle registration by which to potentially identify them by if they are not carrying some form of personal identification. In addition, a study conducted over a six year period from 2000 to 2005 revealed that the mortality rate per 100 traffic accidents was significantly higher for pedestrians compared to motorcyclists and automobile passengers (Li et al. 2008 cited by Law and Govender 2016).

Road traffic accidents are a significant component of commuter medical emergencies. When analysing traffic injuries, head and neck trauma are of special interest because of the probability of unconsciousness or unresponsiveness in casualties. In this regard, MEISs can play an important role in expediting commuter accident management procedures.

Medical emergency data is available from various regions in China. Guangzhou pre-hospital trauma patient data from 1996 to 2004 collected by the Guangzhou First Aid Service Command Centre revealed that during the nine year period, the total number of pre-hospital care patients had increased by 3.56 times to 58,831 (Li-

angzi and Ceng 2005 cited by Law and Govender 2016). Of these, trauma patients were the largest group, increasing by 7.98 times during this period, and making up 37.98 percent of all pre-hospital cases. Head injuries were the leading cause of trauma, constituting 8.12 percent of all trauma cases, and these emergencies are commonly associated with unconscious or non-responsive patients (Roberts 2013).

An analysis of 83,702 medical emergency records in urban Shanghai during 2007 indicated that the five leading causes of pre-hospital cases were trauma, cerebrovascular disease, cardiovascular disease, coma, and fever (Guorang and Che 2008 cited by Law and Govender 2016). This was very much in line with the data analysed from Beijing, and once again, MEISs could play a significant role in facilitating these patient's emergency procedures. In analysing the data of 18,076 head injury cases from Shanghai in 2004, "falls" were seen to be the leading cause of head injuries for patients under the age of 14, and over the age of 60, while violent assaults and traffic accidents were the leading causes in the age group from 15 to 59. With regard to MEISs, this is once again significant because the elderly often live alone, and traffic accidents may result in unidentified patients, especially in the case of pedestrians and cyclists (Crisisoncall 2017).

In addition to being the leading cause of pre-hospital emergency care across China, trauma is the fifth most common cause of death, and the leading cause of death amongst persons aged 18 to 40 years, at a rate exceeding 400 000 per year (Meng et al. 2012; Zong et al. 2011). MEISs can play an important role in identifying unconscious or non-responsive patients and notifying their families.

While it is quite likely that a person may carry some form of identification on them at any given time, this may not be sufficient to ensure emergency treatment of a non-responsive casualty, if that identification cannot be tied to a medical insurance policy or a next of kin who can guarantee payment and authorise surgical procedures if necessary. Tracking down this information could consume precious time, but that may prove critical to the patient (HealthID Review 2017).

According to Griffiths (2008), as cited by Law and Govender (2016), the current health care system in China still favours those who are fi-

nancially better off. The implication is that it is important to have immediate access to funds when seeking medical attention in China, and this is where a MEIS can play a critical role in an emergency by providing contact details for one's next of kin. Although the national medical insurance coverage currently exceeds ninety percent, only sixty-two percent of children under the age of five were covered, making them one of the largest uninsured vulnerable groups in China (Yip et al. 2012). These studies reinforce the importance of access to medical insurance or funds when requiring medical treatment in China. For those enrolled in medical insurance, MEISs are a means to communicate these details in event of an emergency.

Current searches have not uncovered the existence of any commercially available MEISs in China at present. There are however several related emergency innovation offerings commercially available in China. For example, "OnStar" is a motor vehicle satellite tracking system with crash sensors that is linked to a Call Centre to automatically notify them of any vehicle impact (Shanghai OnStar Telematics Co 2013). The Call Centre is then able to either contact the driver to confirm the accident or mobilise emergency services to the accident site if necessary. "Eachpal" is a tracking system that uses a combination of global positioning system (GPS) together with mobile phone base stations and WIFI to track a transmitter that is worn by a user. The user's loved ones are able to monitor the user's movement via a website, and the user is able to trigger an alert to their loved ones via their transmitter (Eachpal LLC 2012). While both 'OnStar' and 'Eachpal' offer an alert in an emergency neither provide access to the user's medical information and, therefore are not MEISs as defined in this study. However, the fact that they both use computer and GPS technology, may suggest that MEIS innovation in China would predominantly follow the route of electronic information design types. In light of the above, this paper explores the Chinese citizens' knowledge of and attitude towards a MEIS, using the methodology below.

METHODOLOGY

This research design was guided by the researchers' post-positivist worldview that knowledge can be gained as a result of careful obser-

vation and measurement of the objective reality that exists in the world and developing numeric metrics of those observations (Cresswell 2013). Descriptive research and a cross-sectional design were used to address the research problem. The independent variables in this study are the Chinese citizens' knowledge of and attitude towards a MEIS and the dependent variable is the strategy to promote the mass adoption of a MEIS. A quantitative approach using an online questionnaire to conduct a survey was deemed appropriate for several reasons, *inter-alia*, the study sought to measure known variables by surveying a large sample, rather than by exploring constructs in depth (Leedy and Ormrod 2010), and it is appropriate for descriptive studies that seek to determine the association between variables through the use of survey methods (Maree 2010).

The tool that was used to conduct the survey was an online questionnaire hosted on a Chinese survey website called "Sojump". Cognizance was taken of the advantages and disadvantages of using on-line questionnaires (Survio 2013). Since the online questionnaire was hosted on the "Sojump" website, only that segment of the target population with internet access could be invited to participate in the survey, and this was referred to as the accessible population (Regenesys 2013). Carsten (2015) stated that nearly fifty percent of the total Chinese population had access to the internet, it could be extrapolated that the accessible population was around 450 million people.

The questionnaire was initially drafted in English and tested on a pilot sample of three respondents to firstly verify that the completion time did not exceed twenty minutes, and secondly to check for any potential threats to the instrument's internal validity because unreliable instruments can influence results (Maree 2010). After conducting the pilot study, four questions were found to be ambiguous and were re-worded to clearly express the correct context. The questionnaire was then translated into Chinese by a professional translation company and further reviewed for localisation. In this regard, localisation included not only translation of the text, but also adaptation of the user interface and the content to suit the Chinese cultural conventions and norms (Anastasiou and Schaler 2010).

Sample

The target population for this study included all Chinese citizens over the age of eighteen. This constituted a target population size of around 900 million people (National Bureau of Statistics 2012). The aim was to use stratified sampling to secure a sample of around four hundred respondents across six strata, representing the main administrative regions of China. As reflected in Table 1, each stratum's sample size was based on the proportional population of the administrative region.

Table 1: The main administrative regions in China

<i>Region</i>	<i>Population (%)</i>	<i>Proposed sample size</i>
North West China	7	29
North China	12	49
North East China	8	33
East China	29	118
South West China	14	58
South Central China	28	113
Total	100	400

Source: National Bureau of Statistics of China 2011

Due to financial and time constraints and challenges associated with selecting a random sample across China, it was not possible to carry out stratified random sampling. Instead, the stratified sample was selected using a snowball sampling technique to leverage a network of associates to distribute the questionnaires (Maree 2010). The researchers used email and social networking to send personal requests to known associates across the six strata to complete the online questionnaire and forward it to their extended networks which is a snowballing technique. One of the biggest sampling challenges was achieving proportional representation across the six strata and this was especially true for several regions where the researcher did not have a strong personal network. The fear was that this could give rise to sampling bias, which Leedy and Ormrod (2010) define "as any influence that may distort the data" such as replacing the shortage of participants in one region with those from another. As a result, the researcher chose to increase the sample size in order to reduce the risk of any sampling bias. Both descriptive and inferential statistical analysis tech-

niques were applied to the data using the IBM SPSS software.

Ethical Considerations

Although some questions pertained to personal health and medical history, respondents were not asked to enter their names or any form of identification and care was taken to ensure that the questions did not subject them to any undue stress, embarrassment, or physiological discomfort. Furthermore, respondents were presented with an informed consent statement at the start of the online survey that guaranteed anonymity, and clearly stated that participation was voluntary with the right to withdraw at any time. Access to the completed online questionnaires was secured by a password protection and accessible only to the researcher. The data was used solely for the purpose of research, and all analysis was conducted by the primary researcher himself.

RESULTS AND DISCUSSION

Although the demographic makeup of the sample in respect of gender, age, region of residence, and income varied from the actual population, the sample was represented by both genders, all age groups over 18 from the six administrative regions, and all income groups. The representation of these demographic groups could however have influenced other variables in the survey, which may have affected the overall results. For example, regarding gender, women placed significantly higher importance on the cost of a MEIS compared to men, and because women constituted seventy percent of the sample, it could be inferred that “cost” is of greater importance to the target population.

Very low (2%) representation of the over 55 year olds was of concern, given that an estimated twenty-one percent of the total Chinese population in 2014 was over 55 years old (Index Mundi 2015). However, one of the stated assumptions of this study was that adults aged between 18 to 55 years old are the primary decision makers on the use of a MEIS, and the implication is therefore that they are the ones that would prescribe its use for their parents over 55 years. Thus, representation of respondents aged over 55 years could be considered less important.

The relatively high proportion of respondents whose household income was in the lowest or highest tiers could have also influenced the results, which revealed positive correlation between household income and willingness to spend on a MEIS, and therefore it is possible that the percentage makeup of the sample population who were either not willing to pay for a MEIS, or willing to pay more than CNY 1000, was overstated compared to the target population.

Knowledge and Perception of a MEIS

The study revealed that the overall knowledge about the existence, purpose and functionality of a MEIS in China was extremely low, with eighty-five percent of the respondents stating that they knew nothing or very little about a MEIS. Furthermore, only eleven percent of respondents knew someone that had used a commercially available MEIS, and very few carried any form of emergency contact information on them in case of an emergency. However, the participants perceived a MEIS to be of great importance in an emergency where the patient is unconscious, for various persons and reasons as reflected below:

- Themselves: in expediting rapid and accurate treatment by communicating their medical information and medical history to the doctor treating them; notifying their family of the emergency; and facilitating authorization and payment for treatment.
- Their family: in offering them peace of mind that they would be contacted in event of an emergency.
- The hospital and doctors: in being able to identify the patient and record their treatment; and access patient medical history.

It emerged that the respondents were most likely to use a MEIS for their parents over 55, followed by their children under 18. The vast majority (82%) of the respondents stated that they were willing to pay for a MEIS compared to the rest (17%) who indicated that they would only use it, if it was free. The respondents also asserted that the best way to store and disseminate emergency information in case of an emergency was to use “database storage” such as a cloud service that was managed by an emergency call centre operation. With regard to the type of device, the majority chose wristbands, wallet cards, and mobile phone APP icons, as the most

effective means to display emergency information. The aforementioned is similar to that reported in several international studies (ACEP 2017; Crisisoncall 2017).

Mass Adoption of a MEIS

To promote the mass adoption of a MEIS in China, it is imperative that awareness of, and knowledge on the purpose and role of a MEIS is widely communicated amongst the Chinese population. In this regard, viral marketing using the internet as a tool could play a powerful role. An effective strategy would be to engage key opinion leaders and/or well-connected consumers to seed the message. The awareness campaigns should include story-telling that strikes an emotional chord with the consumers and encourages them to want to virally re-share. The content should illustrate real life scenarios that people can resonate with where MEISs have played an important role in saving lives and reducing trauma.

With mass adoption of MEISs across China as the ultimate goal, an initial test market should focus on the eastern region of China, where the adoption barrier is lower because citizens in these regions were already more likely to carry some form of emergency contact information. Specifically, the test market could focus on a tier-1 city in this region such as Shanghai where the annual household income is relatively higher and consumers are more willing to be early adopters of a new innovation. In addition, the initial target age group should be those aged 35 to 59, who exhibit more rational buying behaviour and are more likely to use a MEIS to address their safety needs.

During the “interest” and “persuasion” phase of the adoption process, the marketing messages should clearly explain the specific use of a MEIS and communicate its real advantage, namely, to save lives and reduce trauma in a medical emergency. The most important issues to highlight would be: vulnerability of elderly parents; protection of young children; the “pay-or-die” hospital phenomenon; medical issues such as cerebrovascular disease, cardiovascular disease, and diabetes; risk of accident trauma; and travel safety (HealthID Review 2017). Most importantly, the concepts of “missingness”, “family connectedness”, and “peace of mind” should be emphasised.

In the “evaluation” and “decision” phase, the strategy should shift to specific product criteria, especially when addressing the female market who place higher value on most product criteria compared to men. Since “security and privacy” of personal information was found to be exceptionally important, data security such as encryption should be implemented during the data transfer and storage processes, and it is important that assurance is offered to the users that their personal information will be kept safe and not be used for unsolicited marketing. “Brand and reputation” could also play a role in assuring users, if the MEIS was launched as a product line extension of an established and trusted brand in China.

“Features and functions” are also important factors at this stage. The respondents want to be able to store their medical records in order to give them greater control over their own healthcare and objectively consider the doctor’s recommendations. In this regard, functionality that allows the electronic uploading and updating of patients’ medical records either by the medical practitioner or by the MEIS user, should be implemented. Another function that would prove very attractive due to its perceived usefulness amongst the participants would be the inclusion of sensors on a wearable MEIS that enables them to upload data to the cloud for analysis, and receive advice or even trigger an alert to a physician in the event of any high risk abnormal findings.

“Aesthetics and fashion” are somewhat important to the respondents, although more so to the higher income “new mainstream” consumers. Since one of the criteria of a MEIS is that it should be visible in case of an emergency, it is quite important that the aesthetic design is carefully considered to prevent barriers to adoption. This is especially true in the case of ‘wearable’ designs such as wristbands and necklaces, which are associated with fashion.

As a novel concept, it would be strategically prudent to first launch a minimum viable product priced at no more than CNY 150 to test market response. A more “feature-rich” offering such as one that included medical sensors could follow, depending on initial response, and this should be priced at less than CNY 500. Any price point above CNY 500 is likely to inhibit the mass adoption of a MEIS in China.

In the “trial” and “implementation” phase of the adoption cycle, several additional product criteria should be focussed on. “Ease of use” of the MEIS would be critical for a number of reasons. Firstly, as a novel product in China, the Chinese will not be familiar with its operation, and a complicated system would pose an immediate barrier to mass adoption. Secondly, as a technology based product, one would have to be extremely mindful of the elderly who are the most likely users of the MEIS, and who may not be comfortable using new technology. Thirdly, as an emergency system, it is imperative that a MEIS is simple enough to operate by almost anyone. In this regard, the entire ecosystem should be designed with the user experience in mind.

“Comfort and convenience” are also of strategic significance during the trial phase. The nature of a MEIS is that it should be carried by the user at all times and visibly displayed. In the case of a wristband design, it would be very convenient if the MEIS were integrated into an existing device such as a watch so that the user was not required to wear an additional item on their wrist. Alternatively, the material should be durable and practical for everyday wear and not require the user to remove it when bathing. Similarly, this would apply to a necklace too, and in addition the necklace chain should be designed with comfort in mind and should not entangle with long hair. It might also be convenient if the MEIS was offered as in the form of a pendant that could be attached to a user’s existing necklace. In the case of an APP icon, the design should factor in that many people have a screen lock on their mobile phones and therefore, a screen icon will not be convenient at all unless it is both visible and accessible from the lock screen.

Finally, “quality and reliability” are important criteria to address during the final confirmation phase of the adoption cycle. In achieving viral growth and mass adoption, the MEIS should be an emotional trigger and daily reminder of safety and security, and family connectedness. It should become part of the everyday life of all citizens. A positive user experience will further promote the use of the MEIS by family and friends.

CONCLUSION

The aim of this study was to explore Chinese citizens’ knowledge of and attitude towards a MEIS, so as to inform a strategy to promote its mass adoption in China. It was ascertained that

although the respondents perceived a MEIS to be highly beneficial in a medical emergency, most said that they “might” use it. This disconnect poses an interesting question, and a qualitative study into the reasons could provide further understanding and this knowledge could help in promoting its mass adoption across China.

The overall knowledge about the existence, purpose and functionality of a MEIS in China was extremely low, with eighty-five percent of respondents stating that knew nothing or very little about a MEIS. Furthermore, only eleven percent of respondents knew someone that had used a commercially available MEIS, and very few people themselves ever carried any form of emergency contact information on them in case of an emergency.

The respondents were most likely to use a MEIS for their parents over 55, followed by their children under 18, before using it for themselves. Eighty two percent of respondents stated that were willing to pay for a MEIS compared to seventeen percent who said that they would only use it if was free, and only one percent who claimed that would not use a MEIS at all.

The best way to store and disseminate emergency information in case of an emergency was to use “database storage” such as a cloud service that was managed by an emergency call centre operation. They chose wristbands, wallet cards, and mobile phone APP icons as the most effective means to display the use of a MEIS in an emergency.

When promoting the mass adoption of a MEIS in China, it is imperative that awareness of and knowledge regarding the purpose and role of a MEIS is widely communicated amongst the Chinese. In this regard, viral marketing using the internet as a tool could play a powerful role. An effective strategy would be to engage key opinion leaders and/or well-connected consumers to seed the message. These awareness campaigns should include story-telling that strikes an emotional chord with the consumers and encourages them to want to virally re-share. The content should illustrate real life scenarios that people can resonate with where MEISs have played an important role in saving lives and reducing trauma.

With mass adoption across China as the ultimate goal, an initial test market should focus on the eastern regions of China, where the adop-

tion barrier is lower because citizens in these regions were already more likely to carry some form of emergency contact information with them. Specifically, the test market could focus on a tier-1 city in this region such as Shanghai where the annual household income is relatively higher and consumers are more willing to be early adopters of a new innovation. In addition, the initial target age group should be those aged 35 to 59 who exhibit more rational buying behaviours and are more likely to use a MEIS to address their safety needs.

RECOMMENDATIONS

Research should be conducted among medical practitioners to ascertain their opinion on the value and purpose of a MEIS. This knowledge could optimise the design of a MEIS and enhance its efficiency. Research should also be extended to determining the prevalence rates of unidentified casualties, what methods are currently used to trace their loved ones, how long this process typically takes, and what the potential impact is of not having access to the victim's medical history. This information could further inform a marketing strategy to promote and position a MEIS in China.

LIMITATIONS

China is a large country with an ethnically and economically diverse population and therefore caution should be exercised in generalizing the results from a sample population secured using a snowball technique. On the other hand, the researcher was unable to locate any prior studies on MEISs with regards its commercial implementation, viability, or use, and therefore this study has filled an important research gap in the Chinese market and formed the basis for further research in other markets. Human beings are diverse subjects and due to the low sample representation of citizens in the western regions of China, it is uncertain whether generalisation can be extended to this geographical area. It may therefore be prudent to expand the sample population in this region. The western regions of China (Northwest China and Southwest China) were significantly under-represented (5% of the sample) considering that the region represents twenty-one percent of the total Chinese population.

NOTE

- ¹ MedicAlert® is a leading brand of MEIS that was established in 1956, which by 2014 had a worldwide subscriber base of around 4-million users across a global population that exceeded 7-billion people (MedicAlert Foundation 2014; CIA 2014).

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