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Title: Collaborative child home accidental injury prevention: an action research study

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ABSTRACT

Child home accidental injury is a global health issue and promoting child safety is a pediatric nursing challenge worldwide. Planning child home accidental injury prevention requires understanding of factors influencing parents' behavior. Evidence suggests participatory health promotion positively influences behavior, however research with Thai parents is limited. This qualitative, action research study aimed to understand Thai parents' experiences of participating in a collaborative child home accidental injury prevention programme and its influence on their behavior. Eight parental mother/father couples from one Thai province consented to participate, providing a wide range of data via in-depth individual interviews and self-assessment questionnaires. Thematic analysis of interview transcripts yielded three themes: "collaborative learning"; "parental behavior change"; and "reflective learning extends beyond families". Participants reported that workshop participation improved their child home accidental injury prevention behavior. This study can inform pediatric nursing, child healthcare practice and child health policy in Thailand and beyond.

Key words Child accident prevention, Collaborative learning, Behavior change, Parent experience, Thailand

INTRODUCTION AND BACKGROUND

In Thailand, child home accidental injury is the leading cause of mortality and morbidity in children under 14 years of age (Child Safety Promotion and Injury Prevention Research Center (CSIP), 2007). In 2005, 227,870 accidental injuries occurred (Sitthi-amorn *et al.*, 2006) with more recent figures suggesting the problem is reaching epidemic proportions (CSIP 2012). However, the proportion of all child accidental

injuries that occur in the home is difficult to determine from the available statistics. For the purposes of this study child home accidental injury was defined by the research team as "an accidental fall, scald, burn, bite, sting, choking, electric shock, fracture or near drowning that occurs in the home or domestic garden of a child". The term "unintentional injury" is more recently used in some Western countries (NICE, 2010) however the term "accident" is used in this paper, because it is context specific to the lead researcher's work in Thailand.

Studies link socioeconomic factors such as low literacy, low income and parental background to increased risk of accidental injury (Ingram, 2012). However, others suggest there is benefit from supporting parents from all backgrounds to reduce home safety hazards (Mayes, 2014). Effective prevention is influenced by: caregivers' supervision; environment; and child characteristics (Munro *et al.*, 2006). Hearing from other parents about age appropriate prevention strategies has been acknowledged a useful way to learn (Ablewhite, 2015).

In Thailand in 2004, approximately one third of children aged 1-4 were mainly looked after at home by extended family such as Grandparents (National Statistical Office of Thailand, 2004) which potentially increased their risk of home accidental injury (CSIP, 2007). A recent study concluded that children were at increased risk from home accident injury when mothers were absent for more than 8 hours a day (Younesian, 2016); although this study did not explore fathers' influence. Where Thai children are living in homes with two parents and extended families such as grandparents, working mothers and fathers may be absent from the home for extended periods of time. Extended family caregivers' lack of knowledge of child home accident prevention strategies may account for the increased risk.

Providing home safety education and products can create a safer home environment (Kendrick *et al.*, 2008; 2012). A Canadian study of parents teaching home safety rules to children of different ages (Morrongiello *et al.*, 2014) concluded parents often equated teaching the rules with child compliance with the rules. If children didn't comply, it was because they didn't understand; assuming that safety rules, not necessarily removing hazards would improve home safety. Research in this area, has mainly been undertaken in a Western context (Ablewhite *et al.*, 2015; Stewart *et al.*, 2016), potentially limiting transferability to Thailand due to environmental, cultural and resourcing differences. However, Thai studies also suggest limited parental knowledge critically influences their child-rearing behavior (Phuphaibul *et al.*, 2002; Ngamsuoy *et al.*, 2006). Although Thailand has implemented several World Health Organisation aligned child accidental injury prevention projects (Ministry of Public Health, 2012), injury incidence in children aged 1-4 remains problematic (Peden *et al.*, 2008). There is no Thai research exploring how a collaborative

approach might influence parents' child home safety related knowledge and behavior. The purpose of this study was to address this knowledge gap by developing an in-depth, qualitative understanding of Thai parents' experiences of participating in a child home accidental injury prevention collaborative workshop programme and its reported influence on their behavior.

METHODS

Context

During the child home accidental injury prevention collaborative workshop programme, eight participant mother/father parental couples participated. They were divided into two groups to optimise workshop size and facilitate discussion. Each couple attended an initial interview in their home with the researcher, then three ninety minute group workshops held once every two weeks, followed by a final interview in the home one week after the end of the workshops. A range of researcher facilitated collaborative activities were undertaken during the workshops including: exploration of parental assumptions about child home safety; sharing of previous experiences of child home injury, current knowledge and concerns; consideration of latest guidelines on the topic; and production of a context relevant booklet with guidelines for child home safety, for use by them and other local parents.

Design

Located in an interpretive paradigm (Hughes, 1997), this qualitative research (Silverman, 2016) was informed by a theoretical framework. The framework combined empowerment theory (Rappaport, 1987), social cognitive theory (Bandura, 2004) and the theory of planned behavior (Ajzen, 2002). This combination acknowledges both social and individual domains of child home accidental injury prevention behavior within societies. These theories were used as a theoretical lens to view the data, contributing to a greater depth of analysis. They also informed the discussion of how the study findings linked to and advanced current related knowledge. An action research methodology (Stringer, 2014) facilitated parents' active participation in cycles of "thinking, looking and acting" during the process.

Participants

Eight, male-female parental couples were purposively recruited (Bryman, 2012) from two childcare centers in one municipal sub-district region in Thailand near the workplace of the lead researcher. These centers cared for children up to 4 years from families with varied domestic situations; offering a broad potential sample population. Both center managers permitted the researcher to informally approach all parents about the study at each child care center on a specified day, after leaving their child/children for day-care. A participant information sheet was provided to interested parents who had one week to decide to participate, prior to giving informed consent. Inclusion criteria were: having at least one child aged 1-4 years with whom they lived; extended family living with them; able to write and speak in Thai; and willing to participate in all workshops and research processes.

Data collection

Data collection took place in 2012, over a period of seven weeks. A range of data collection tools yielded rich qualitative data to inform both the collaborative workshop process and outcome of the study.

Pre and post workshop in-depth semi-structured interviews with an interview guide, were conducted in participants' homes with each individual participant in week 1 and week 7 (n=32). Pre-workshop interview topics included understanding of safety issues, prevention and attitude, parenting influences and motivation to participate. Post workshop interviews focused on changes in attitude and behavior and participants' experiences. Interviews were digitally audio recorded and transcribed first into Thai then into English. The lead researcher was bi-lingual, working with data in both languages to ensure transcription and translation consistency and accuracy.

Questionnaires devised by the researcher were context relevant for Thailand comprising simple Likert measurement scales, open and closed questions. They gathered relevant individual and social data such as home environment, parenting approaches, access to resources, occupation and education.

Participants completed these in hard copy with the researcher at the pre and post workshop interviews at home. In keeping with an action learning approach, pre-interview questionnaire data was shared with parents in group workshop one, to facilitate open collaborative learning and in-depth consideration of their prior experiences and understanding relating to child home accidents. This illuminated participants' backgrounds as a basis for understanding their action research consequences (Denscombe, 2003). Post workshop self-assessment questionnaires also completed with the researcher at the post workshop

interview. Discussion of these facilitated parental couples' reflections on the collaborative workshop process and its outcomes, in a final think-look-act cycle of action learning.

Ethical considerations

Northumbria University Ethics Committee, UK (16/9/2011) and the relevant provincial district municipality, Thailand (13/10/2011 CM. 61506/992) gave permission. No children were present during the research. Participants were assured of anonymity in reporting, gave informed consent and had the right to withdraw from the study. Parents agreed to share information with each other in workshops whilst maintaining external confidentiality.

Data analysis

Interview transcripts were de-identified then subject to line-by-line, manual, thematic analysis (Creswell, 2009) as follows: 1) transcribing and transposing interviews into text; 2) reading and re-reading; 3) open coding; 4) developing coherent themes; 5) determining patterns in the themes; and 6) interpreting the meaning of themes within the study theoretical framework and aim. The latter included consideration of links to Empowerment Theory (Rappaport, 1987), Social Cognitive Theory (Bandura, 2004) and the theory of Planned Behavior (Ajzen); for a potential theoretical explanation of parents' perceptions and experiences. Qualitative questionnaire data were anonymised and descriptively analysed through manually reducing and displaying them in tables (Miles & Huberman, 1994). Questionnaire results were used with each workshop group separately to enhance ownership of their data, supporting and informing collective learning. Once all workshops and post workshop interviews were complete, all data was pooled for more in depth qualitative, thematic analysis. Only the data from the whole post workshop programme analysis is presented in this paper.

Initial thematic analysis was undertaken initially entirely in Thai by the lead researcher. Once themes began to emerge, full transcripts were translated into English by an expert scribe who was not a member of the supervision team. This informed discussions with the wider research supervision team who did not speak Thai; facilitating further analysis and researcher reflexivity (Mann, 2016). The lead researcher used the outcomes of these meetings to inform ongoing analysis in Thai. Once analysis was fully complete with substantive themes identified, the study was written up in English.

Rigor and trustworthiness

Several strategies were used to ensure the credibility, dependability, transferability and trustworthiness of this qualitative action research study (Lennie, 2006; Rolfe, 2006). Multiple data collection tools enhanced the trustworthiness of emerging analysis (Shenton, 2004). Sharing interpreted summaries of questionnaire and interview data in workshops enabled accuracy checking by participants; informing the workshop process. Participants could comment on the accuracy of researcher's interpretations at any stage during the research.

RESULTS

Participants were: aged between 24 and 54; had varied levels of education; and had a range of occupations with associated income levels. Their family household constitution was as follows:

Insert Table 1 here

Thematic analysis of interview transcripts revealed three key themes: “collaborative learning”; “parental behavior change”; and “reflective learning extends beyond families”. Each theme is presented with supporting translated data quotes showing parental perceptions and experiences; an identifying code in brackets after each quote provides the de-identified data source (ID#n).

Theme 1: Collaborative learning

Participants clearly valued the workshops suggesting improved vigilance with their children around home accidental injury. One father said:

“I am very fortunate to have an opportunity to take part It made us change to increase child supervision significantly. Formerly we ignored this issue but now we do not neglect it at all”
(ID#10).

All participants recognised their collaborative, participative learning within their group had enabled an enjoyable sharing of experiences:

“I could share opinions and experiences with other parents.....We could exchange ideas. It was fun and I was very satisfied” (ID#14).

Shared stories about their children's previous falls, burns and scalds and a high incidence of this type of injury amongst participant families, created a shared sense of purpose to improve for the benefit of their children. One mother discussed how she and her husband worked together to implement the safety guidelines, for example she now stored sharp objects safely:

“After workshops……. I tidied the hazardous things for a child, like knives and sharp objects. My husband also helped me to keep them safe. I sometimes forgot to keep them carefully, my husband reminded me. We help each other to take care of home environment safety” (ID#9).

This quote indicates a shared sense of parental responsibility for child home safety, potentially enhanced by the collaborative nature of their workshop experience involving both parents.

Theme 2: Parental behavior change

Following the workshops, both mothers and fathers linked their workshop experience to positive behavior change, conveying a sense of pride in their achievement:

“I certainly think everyone has made a lot of behavior changes and they also have become permanent. For me, I am now at a 98% change” (ID#4).

Some noted a positive change in a participant spouse's behavior:

“The best thing is my husband has mostly improve d himself (laughs) It is the best outcome for me. This is because formerly I had to take responsibilities at home by myself such as supervising children and for all household work. Nowadays, my husband helps me to do everything” (ID#3).

It was clear that raising awareness had heightened parents' vigilance. One father said that after the workshop he now regularly did risk assessments at home:

“When I walk around the home I see the risk point and I improve it immediately” (ID#4).

Although participants intended to follow the group produced guideline booklet, some said they still lacked some home safety products, especially fence gates and safety gates. This they attributed to limited resources, acknowledging differences between parents in the group:

“We are different on family statuswe may gradually implement them.... our economic status is different” (ID#7).

Joint parental decisions, were often based on affordability:

“For my home, I see that we still lack a fire extinguisher.....However, we now need to know about our expenses. We have planned to buy it but may be later” (ID#7).

Not all changes reported involved purchasing equipment. Some were simple behavior changes, for example, one mother said she now restricted unsupervised access to dangerous places and things in her house:

"I attempt to follow the guideline.. for example I also applied a wooden board at the door to stop child getting into the bathroom and I provided cages for the dog and fowls" (ID#15).

One father suggested a novel method he had devised to reduce the bite risk associated with his daughter hand feeding next door's dog:

“After the workshops, I have now already taught her to put the meat balls on the ground and use chopsticks to stir them for the dog.. this can prevent hand injury” (ID#2).

This inventive use of chopsticks clearly illustrates the cultural context of the study. Further examples of changes included locking away medicines, keeping the bathroom floor dry to avoid slips, disposing of broken, now sharp edged toys and covering the sharp edges of furniture and other objects, again illustrating cultural context:

"...I saw the Spirit Shrine has sharp corners then I thought the children might stumble over a stone and get hurt by falling. Thus I covered every corner with thick wire tape" (ID#4).

All participants were clearly satisfied with their experience, new knowledge and their ability to apply it through the guideline booklet developed:

“After I joined the workshops, it is very good. I changed myself a lot.....My wife and I have now become more aware. Formerly we ignored this issue but now we do not neglect it at all” (ID#10).

Theme 3: Reflective learning extends beyond families

The influence of participants' learning clearly extended beyond their immediate family context as they expressed concern about other children in their community:

“When I saw other children outside the home who might get harmed, I shouted to them to give them a warning. In the past, I never told them because I thought they were not my children. But I now always remind them because I am worried about every child. I do not want any child to get injuries” (ID#10).

This sense of community responsibility was conveyed by another father suggesting formal education in school about child health promotion was needed:

“I think reducing the risk means parents need to have more knowledge. If they do not have it, they need to be taught.. at high school...institutions should provide at school a course on health care of young children aged 1-3” (ID#4).

Another mother felt knowledge dissemination should be the hospital healthcare providers' role:

“Actually, the hospital should provide training for parents when they take children to be vaccinated. As I saw, they would be concerned just with the child's growth and vaccination but they did not care about childhood home injury prevention” (ID#7).

Others proposed that village health volunteers' capabilities should be developed to accomplish child home accidental injury prevention in each Thai community:

"I would like to propose that the health care unit provide training in this issue for the village health volunteers [they] could explain how to prevent child accidental injury at home for parents in the community" (ID#15).

Others talked about their group responsibility to disseminate child home accidental injury prevention information:

"I also got new relationships with three families..... We are now the center of parents to disseminate this knowledge to others. We can distribute our guideline manuals to other parents at school" (ID#1).

DISCUSSION

This paper has presented Thai parents' experiences of participating in a collaborative workshop programme to inform their child home accidental injury prevention behavior. The workshops specifically focused on prevention of injury in children aged 1-4. This was because of the high morbidity and mortality rates in this age group in Thailand. Clearly though, some safety information is relevant to other age groups, where for example, babies start walking before the age of 1 year or children over 4 years are small in height and susceptible to the same height hazards as younger children. The key study objectives were to better understand influences on parents' prevention behavior and ascertain their experiences of participating in the collaborative workshops. The practical outcome for both groups was the development of a home safety guideline booklet, which differed slightly between groups, having been informed by their own process. A degree of consistency was evident in both booklets as both groups having had a single researcher facilitator. Data from post workshop face-to-face interviews indicates that the experience had empowered parents to improve the safety of their home environment and their parenting practices. Workshop characteristics such as social interaction through collaborative learning, mutual trust and a democratic approach are symptomatic of conditions necessary for empowerment (Pretty *et al.*, 1995; Kenrick, 2012). Group activities exploring the issues raised in each of the cognitive, emotional, and social domains (Burke, 2003). Parents' feelings of self-control and self-efficacy were potentially enhanced post workshop. For example a range of mothers and fathers indicated that if they saw a safety risk they now took immediate remedial action, informed by their new knowledge, such as giving chopsticks to a child to feed the dog or blocking access to a hazardous bathroom.

Importantly, participants reported that through the collaborative nature of the experience, their capability was transformed, valuing their new knowledge. The "Think-Look-Act" cycles of action research (Stringer, 2014) enabled them to: share responsibility for analysing their current practice (think); explore evidence and ideas for potential positive behavior and practical changes (look); and collectively produce a child home accidental injury prevention guideline booklet that they all felt ownership of and empowered to implement (act). This reflects the continuous and dynamic nature of participatory action research. Feelings of empowerment were generated through the development of collaborative conceptual knowledge shared between parental couples within groups (Gaventa *et al.*, 2002). As suggested by empowerment theory (Gibson, 1993) such an approach can engender feelings of self-control through a focus on self-belief, critical awareness and taking action (Zimmerman, 2000). Their workshop experience clearly improved feelings of self-efficacy (Bandura, 1997), providing the context for planned behavior change (Ajzen, 2002). Group dynamics (Forsyth, 2006) resulted in a sense of belonging with data illustrating how the group had formed and functioned. For example one father identified the group workshops were fun, satisfying and a welcome opportunity to exchange experiences and ideas with other parents. Another talked about their group responsibility to help other parents and children in the community by disseminating their new knowledge. This is in keeping with other research that suggests parents value learning from other parents (Ablewhite 2015).

Research identified earlier suggested Thai parental knowledge is an important influence on their behavior (Phuphaibul *et al.*, 2002) and this was clearly demonstrated in this study. Mothers and fathers participating in this study suggested they had not previously appreciated the seriousness of child home accidental injury in Thailand (CSIP, 2007). This influenced their motivation to participate and make behavior changes. Income evidently influenced the ability of some parents to comply with health promotion advice around purchase of home safety equipment, potentially perpetuating inequalities (Dahlgren & Whitehead, 1991). Although national guidelines in some other countries for example the UK, do not recommend domestic fire extinguishers because of the risk of burns whilst fighting the fire, there were no such Thai national guidelines. In addition, some participants lived in rural settings not easily reached by emergency services. Owning an extinguisher was therefore an aspiration, included in the group produced guideline booklet. However, not all reported changes were linked to providing equipment. Fundamental changes to the way participants lived were identified; for example, how they interacted with animals within the home and the degree to which children of any age had free access to hazardous places like bathrooms and kitchens. Small behavior changes not reliant on external factors are arguably more sustainable longer term; an important factor where families are still growing in size. There was also a reported shift in the degree to which study fathers shared responsibility with mothers for

preventing child home accidental injury. This suggested there was a benefit of involving fathers in this study when other studies have not (Younesian, 2016). This potentially may have further positive influence on other aspects of parenting behavior through shared commitment to child health improvement.

All participant families lived with extended family members. As discussed, evidence suggests child injury from accidents in the home often happen when mothers and potentially fathers, are absent from the home for long periods of the day (Younesian, 2016) and where children are cared for by, for example, Grandparents (CSIP, 2007). Influenced by role modelling of both parents in their household, extended family members may also positively change their behavior, another potential positive consequence of parents' attendance at the workshops. Furthermore, participants may be Grandparents one day, which again emphasises the importance of the sustainability of the learning from the workshops. Although study parents reported improvements in their own child home accidental injury prevention behavior and conveyed a sense of enhanced self-efficacy (Bandura, 1997) following their workshop experience, longitudinal research would be needed to explore the sustainability of their learning and influence on the wider community.

Parents perceived their reflective learning extended beyond their families, evidenced through discussion of community responsibility, school education, and national child health policy. Healthcare in Thailand now reaches 99% of the population, even in rural areas (Kunaviktikul, 2014). Thai policy makers have also attempted to enhance child caregivers' status, particularly village health volunteers. However, up-skilling them to support parents with child home accidental injury prevention has not been a focus. Preparation of village volunteers may also need to include support to understand the concept of health and being healthy more generally (Arpanantikul and Khuwatsumrit, 2017). Time constraints for volunteers, who support families with a range of parenting concerns, may limit the feasibility of its inclusion in their work. The workshop facilitator in this study was a pediatric nurse with relevant expertise (Ngamsuoy *et al.*, 2006). The positive outcomes from this study suggest there may be a role for other pediatric nurses with the same specialist interest, knowledge and skills to carry out such workshops with other parents. However, this is unlikely to be a sustainable model on a national basis in Thailand; given constraints of resource and current lack of specialist health promotion training. Although there were no direct costs to conducting this study, the use of the collaborative workshop approach in other contexts will require allocation of staff resource, and potentially incidental costs such as room hire. In determining the potential social return on investment of such a programme, policy makers would need balance the costs of the programme against potential savings from a reduction in child home accidental injury related healthcare use.

Embedding more home safety education into the preparation of Thai health professionals may enable more consistent effective safety advice and information to be offered during routine healthcare contact; albeit not in the same collaborative learning way that was such a positive, empowering experience for parents in this study. In other parts of the world where health professionals are working with Thai families, the insight provided into norms, customs, values and priorities of participants in this study, might inform their collaborative work with other Thai families beyond the study Thai Province. Participants clearly valued the participative approach. The collaborative workshop model may therefore have relevance to pediatric nursing work with parents of other nationalities in other countries, provided the facilitators take time to understand the perceptions and living contexts of participants as a starting point for a collaborative action orientated approach. Further research is needed, however, to test the efficacy and cost effectiveness of the workshop model in other international contexts.

Limitations

The limitations of this study are that it was conducted in one Thai province, in two childcare centres and with eight couples. These limitations potentially limit the generalisability of the findings beyond the participant group. However, families living in similar cultural contexts may recognise the risks reported by Thai parent participants and seek to make their own positive behavior changes from the data examples offered here. This participatory action research was necessarily heavily influenced by the researcher as facilitator (Munhall, 2001). Potential bias through researcher influence (Stringer, 2014) was limited by a reflexive research approach.

CONCLUSION

This paper has presented a qualitative, action research study of Thai parents' experiences of participating in a collaborative workshop programme that aimed to positively influence their child home accidental injury prevention behavior. Both mothers and fathers valued the researcher facilitated, collaborative learning process which offered the opportunity to learn with, from and about the other parents. Parents reported positive behavior changes and feeling a new sense of collective parental responsibility extending to other children and parents in the community. They suggested ways in which Thai policy makers could ensure all parents were equipped with the child home accidental injury prevention knowledge and skills they now had. Where there are skilled facilitators and available resources, similar collaborative programmes could be used to reach more parents in similar contexts, empowering them to make positive change. As a national model in Thailand and similar international contexts, this may be unachievable. With improved child home

accidental injury prevention education in their initial role preparation, Thai Pediatric nurses, and other health professionals are in a position to influence parenting practice through awareness raising during routine contact; thereby complementing village health volunteer family support. However further research is needed to explore the value, impact and sustainability of the learning from any new child home accidental injury prevention initiatives in Thailand and other international contexts. Importantly continued epidemiological studies of child home accidental injury related mortality and morbidity, building on those reported in this paper, would be an important indicator of the success of any large scale, national public health improvement initiatives in Thailand. Without changes to policy and practice child injury and death from home accidents is likely to remain a public health challenge for Thailand.

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DISCLAIMER

This paper reflects the views of the authors not necessarily the Funders

AUTHOR CONTRIBUTIONS

Study design, data collection, data analysis and manuscript writing: AN

Data analysis and manuscript writing: AM

Data analysis and manuscript editing: PP

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	ID#1	ID#2	ID#3	ID#4	ID#5	ID#6	ID#7	ID#8	ID#9	ID#10	ID#11	ID#12	ID#13	ID#14	ID#15	ID#16
Sex	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Age (years)	35	33	51	40	54	40	33	47	36	40	39	35	24	24	36	37
Education	Bachelor Degree	Bachelor Degree	High School	Primary School	High School	High School	Bachelor Degree	High School	Primary School	Primary School	Primary School	High School	Diploma	Diploma	Diploma	Bachelor Degree
Income (Baht)	150,000	50,000	41,100	0	15,000	0	12,000	17,000	7,500	2,500	5,100	3,000	7,000	7,000	5,000	15,000
Family members in household	10 (3 children, 5 adults, 2 elders)		6 (3 children, 2 adults, 1 elder)		5 (1 child, 1 teenager, 3 adults)		4 (1 child, 3 adults)		4 (1 child, 3 adults)		4 (1 child, 3 adults)		5 (1 child, 2 adults, 2 elders)		6 (2 children, 2 adults, 2 elders)	

No of children age 1-4	2	2	1	1	1	1	1	1
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Table 1: Demographics of Participants