Child Accident Prevention Foundation of Australia
Western Australia

Trampoline Safety in Australia

Report for the Australian Competition and Consumer Commission (ACCC)

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February 2013

Contents

Executive Summary

- The purpose of this study was to use a combination of quantitative and qualitative data collection methods to assist with identifying communication tools to be developed for use in a national campaign for trampoline safety.

- Three survey tools were used in this study to collect current evidence on trampoline safety awareness and trampoline usage:
    a) An online survey targeting parents with at least one child, 15 years old or younger, where the child currently has access to a trampoline (either at home, a friend's house or relatives house);
    b) A short survey targeting parents with at least one child where the child has had access to a trampoline in the past, but does not anymore;
    c) Focus groups to target both audiences outlined in (a) and (b) above.

- The data collected was reviewed by the researchers and entered into Excel for analysis to enable the production of graphs and frequencies.

- The research identified that the guidelines and recommendations on supervision, age of child and number of children using the trampoline are being disregarded and are major risk factors for trampoline injuries. The study reveals that only 23.3% of parents always supervise their children whilst using the trampoline; 40.2% of the children using trampolines are less than 6 years old; and 81.3% of the time there are multiple children using the trampoline at the same time.

- The major findings in this study indicate that parents, carers and children all need to be educated on the rules and guidelines for safe trampoline use. Thus it is recommended that any campaign developed needs to raise awareness of trampoline safety and be specifically targeted at each stage of interaction with a trampoline from set-up and installation through to supervisor and child user.

- It is also recommended that the guidelines on supervision, age, and number of children are made more visible to users. For example, having the rules printed at eye level on the net or having the rules printed on the trampoline mat itself. This should include pictorial warnings to complement the text.

- Key messages that will be incorporated in the trampoline safety resources will include 'use at your own risk', 'add on features don't make it unnecessary to supervise', and 'children should be taught how to use the trampoline safely'.

1. Introduction

Trampolining is a popular activity which provides children with both physical exercise and enjoyment. The injury risks associated with trampolining are high, and can have serious consequences (Eberl et al. 2009) however; these risks are predominantly preventable (Sandler et al. 2011).

Over the years the popularity of trampolining has increased, which is similar to the trend seen in the number of trampoline related injuries in children (Evans et al. 2010), although, it is still unclear as to why these injuries are occurring. The design of the trampoline has been altered in the past, which aimed at improving the safety for trampoline users. This included the introduction of enclosures, padding for the frame/springs, and the production of SpringFree® Trampolines. Despite the introduction of these features, there is no major evidence demonstrating a decline in trampoline related injuries (Alexander et al. 2010).

The purpose of this study was to use a combination of quantitative and qualitative data collection methods to assist with identifying communication tools to be developed for use in a national campaign for trampoline safety. The primary objective was to investigate parents' perceptions on trampoline safety and to explore the behaviours of both parents and children in regards to trampoline usage. The secondary objectives included investigating the type of material, key messages and distribution channels which could be used for the communication tools developed, and would be most successful in improving trampoline safety in Australia.

2. Materials and Methods

The data collection process for this study was carried out using three different survey tools. These tools were designed to collect information on trampoline safety awareness and trampoline usage. The study targeted parents with at least one child 15 years old or younger, where the child either currently has access to a trampoline or had access to a trampoline in the past but does not anymore (either at home, a friend's house or relative's house). The survey tools used focussed on collecting information on the perception of trampoline safety, knowledge of injury risks, raising safety awareness, and previous experience with trampoline injuries.

The first tool used in the study was an online survey targeting parents with at least one child (15 years old or younger) where the child currently has access to a trampoline (either at home, a friend's or relatives house). The participants for this survey were randomly selected from different states in Australia, and were required to complete an online survey comprising 25 questions. This included both multiple choice questions and open ended questions. All of the participants completing the survey had access to the first 7 questions, while the remaining questions were restricted to participants who own a trampoline at home.

The second tool used in this study was a short survey. Similar to the large scale survey, it included both multiple choice and open-ended questions focusing on the perception of safety, knowledge of injury risks, and raising safety awareness. This survey was circulated to several Kidsafe state/territory offices who had volunteered to assist. The staff in these offices distributed the surveys to parents and carers who had at least one child (15 years old or younger) where the child has had access to a trampoline in the past, but does not anymore.

The third tool involved a series of focus group sessions targeting both parents with at least one child (15 years old or younger) where the child currently has access to a trampoline, and parents where the child had access to a trampoline in the past but does not anymore. Five focus groups were conducted with parents at different playgroups, in both metropolitan and regional areas of Western Australia.

Once the data collection process was completed, the data was analysed to identify trends, frequencies and graphs before being summarised into this report.

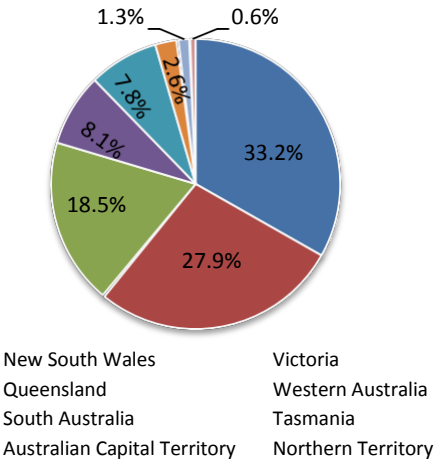
3. Results

3.1 Online Survey

3.1.1 Demographics

Six hundred and seventeen participants who have at least one child (15 years old or younger), that has access to a trampoline, completed the online survey. Of these participants 64.8% (n=400) were female and 35.2% (n=217) were male. Almost three quarters (73.2%, n=453) of the participants were between 26 and 45 years of age. The survey participants resided in a combination of metropolitan and rural locations across Australia, with 68.2% (n=420) of participants residing in metropolitan areas and the remaining 31.8% (n=197) in rural areas. The largest proportion of participants were from New South Wales (33.2%, n=205), followed by Victoria (27.9%, n=172), Queensland (18.5%, n=114), Western Australia (8.1%, n=50), South Australia (7.8%, n=48), Tasmania (2.6%, n=16), Australian Capital Territory (1.3%, n=8), and Northern Territory (0.6%, n=4) (see Figure 1).

Figure 1: Distribution of participants, Australia.



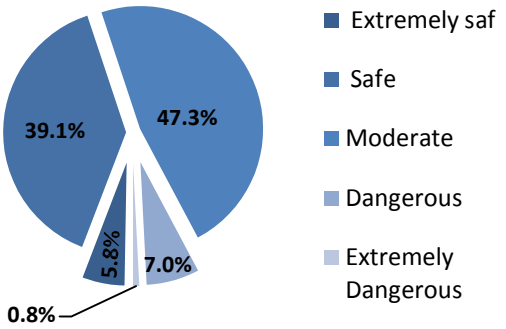
Participants completing the survey were required to report the gender and age for each of their children who have access to the trampoline. Of these children 51.4% (n=583) of the children were male while 48.6% (n=551) were female. Children aged 5 accounted for the largest number of participants children (n=101, 8.9%), followed by 1 year olds (n=93, 8.2%). While at the other end of the scale, 14 and 15 year olds accounted for the lowest number of participants children, with each age group accounting for 53 children (4.7% each).

Of the participants who completed the survey, 78.6% (n=485) have a trampoline at home, while the remaining 21.4% (n=132) have children who have access to a trampoline at either a friend or other family member's house. When comparing trampoline owners with non-trampoline owners, children under 5 years of age are more likely to have access to a trampoline at their own home than children over 5 years of age.

3.1.2 *Perception of Safety*

The majority of survey participants believe that trampolines are safe for children, with 47.3% (n=292) reporting that they are "moderately safe" and a further 39.1% (n=241) reporting them as "safe". Less than 10% of participants reported that they felt trampolines were dangerous, with 7% (n=43) of the participants reporting that trampolines are "dangerous", and 0.8% (n=5) reporting them as "extremely dangerous" (see Figure 2).

Figure 2: Parents' beliefs on the safety level of a Trampoline



When comparing the responses of participants who do not own a trampoline to those that do, 15.9% (n=21) believe trampolines are dangerous/extremely dangerous compared to only 5.6% (n=27) of trampoline owners. Of the females that responded, 8.5% (n=34) believe trampolines are on the dangerous side compared to 6.5% (n=14) of the males. When taking the age of the parent into account it is apparent that there is a relationship between age and views on trampoline safety. Of those aged between 18 and 25 years old 2.9% believe that trampolines are dangerous/extremely dangerous, this point of view becomes more prominent with age where 12.5% of the 56 to 65 year old age group believe trampolines are dangerous/extremely dangerous.

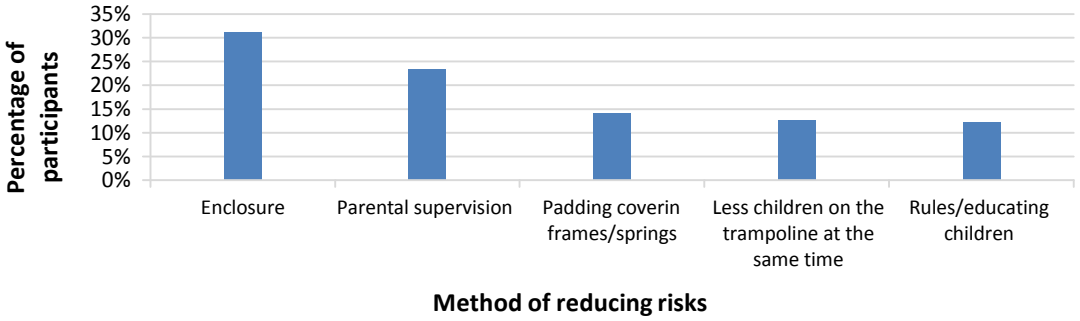
Participants were asked to provide reasons to support their ranking of their perception on trampoline safety. The majority of the parents thought trampolines were safe when there is a net on the trampoline which accounts for 25.1% (n=155) of responses, 13.1% (n=81) said that trampolines are safe when parents supervise their children whilst using the trampoline, 9.7% (n=60) said that the trampoline is safe if children are sensible and do not do tricks/stunts. In addition, the reasons identified by survey participants who believe that trampolines are unsafe include children are unsteady, the trampoline is unstable, children get too excited, children are not aware of the risks, nets can be more dangerous, and injuries can be serious.

3.1.3 *Knowledge of Injury Risks*

The majority of the participants (77.8%, n=480) reported that they are aware of the injury risks related to trampolines, and most of these participants (95.2%, n=457) were able to list the type of injury risks associated with trampolines. The main injury risks which parents identified were fractures (35.3%, n=218), falling off the trampoline (21.6%, n=133), injuries caused by falling onto the frame or springs (14.6%, n=90), and accidents resulting in head injuries/brain damage

(11.3%, n=70). To reduce these risks participants said that enclosed trampolines should be used (31.1%, n=192), parental supervision (23.3%n=144), padding to cover the springs and frame (14.1%, n=87), having less children on the trampoline at the same time (12.6%, n=78), and putting rules in place or educating children on trampoline use (12.2%, n=75) (see Figure 3).

Figure 3: Parents views on how to reduce trampoline injury risks

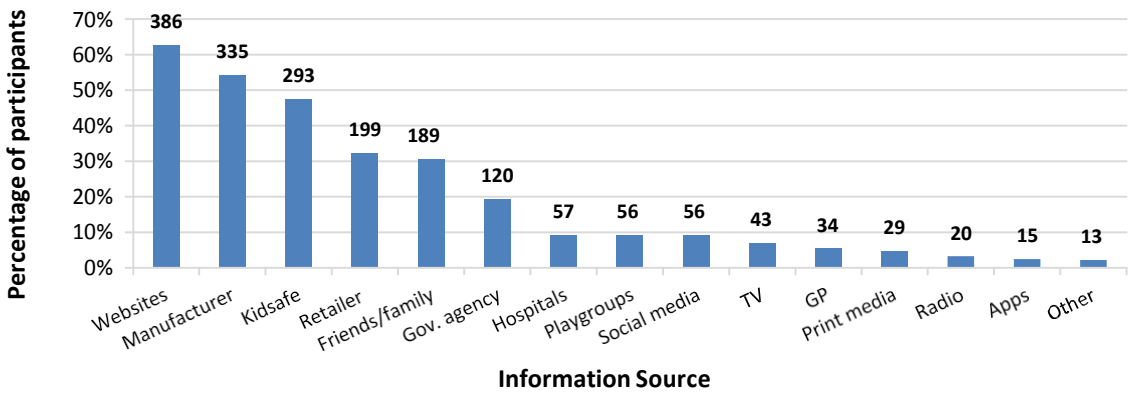


3.1.4 Raising Safety Awareness

Of the 137 participants who reported that they were unaware of the injury risks, approximately 51.1% (n=70) of the participants reported that knowing the injury risks would change their behaviour. The remaining 48.9% (n=67) believe that knowing the risks would not result in them changing their behaviour. When taking age of the parent into account the results demonstrate that 58.2% (n=63) of the parents who were less than 45 years of age believe that knowing the risks would change their behaviour, compared to only 36.5% (n=7) of the parents who are 46 years or older.

When parents were asked to select their top three choices of where they would look for safety information on trampolines, the most common selection was Websites (62.6%, n=386), followed by trampoline manufacturer (54.3%, n=335), and Kidsafe (47.5%, n=293) (see Figure 4). Participants were also asked to rank their choices in order of preference, of which the results correlated exactly to top three choices. Participants would first look for information online (websites) before contacting the trampoline manufacturer or Kidsafe.

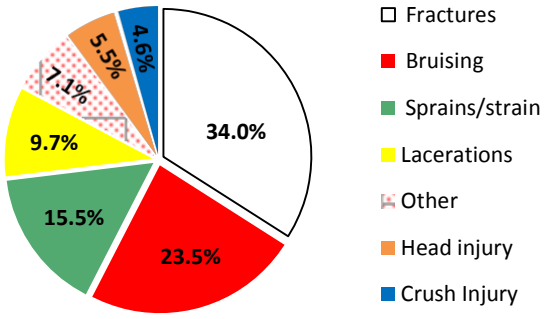
Figure 4: Places where parents would look for safety information on Trampolines



3.1.5 *Previous experience with Trampoline Injuries*

Approximately 18.8% (n=119) of the participants had a child that had injured themselves on a trampoline in the past. A further 21.5% (n=136) of the participants knew someone else's child that had injured themselves on a trampoline. Of the children injured, 72.9% (n=186) of the parents reported knowing what the child was doing before the injury occurred. The most common activity children engaged in before the injury resulted was just jumping on the trampoline accounting for 55.4% (n=103), followed by jumping with others accounting for 17.7%, (n=33), and doing stunts/tricks 5.9% (n=11). The most common type of injury sustained after a trampoline accident was a fracture (34%, n=81), followed by bruising (23.5%, n=56), sprains/strains (15.5%, n=37), lacerations (9.7%, n=23), head injury (7.1%, n=17), crush injury (5.5%, n=13), and other injuries (4.6%, n=11) (see Figure 5).

Figure 5: Type of injury resulting from Trampoline incidents



The most common response by participants when asked what treatment was required by the injured children was "first aid at home" (45%, n=107). This was followed by "visit to the Hospital Emergency Department" (29%, n=69), "visit to the GP" (18.5%, n=44), and "admission to hospital" (7.6%, n=18).

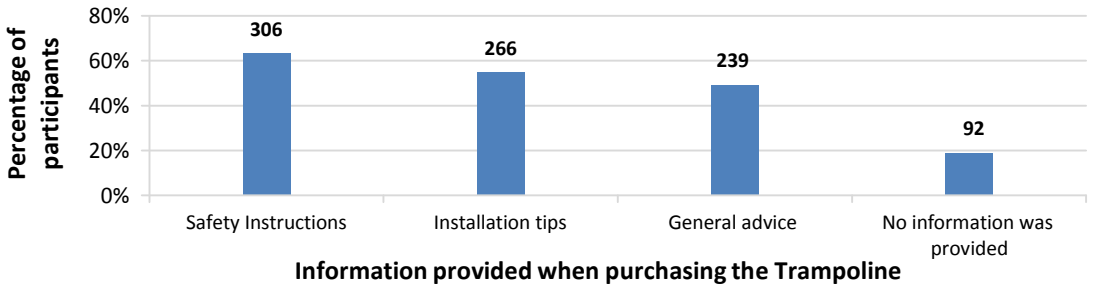
3.1.6 *Trampoline Owners*

Approximately 82.3% (n=399) of the participants who had a trampoline at home said that they purchased their trampoline brand new, 11% (n=53) had a second-hand trampoline, 5.6% (n=27) reported that their trampoline was given to them as a gift, while the remaining 1.2% (n=6) said that the trampoline was already at the house when they moved in. Of those who purchased their trampoline brand new 41.9% (n=167) of them had purchased it between 1 and 2 years ago, 31.3% (n=125) had purchased their trampoline between 3 and 4 years ago, 18.8% (n=75) had purchased it less than 1 year ago, 5.8% (n=23) purchased theirs between 5 and 9 years ago, and 2.3% (n=9) had purchased their trampoline 10 or more years ago.

For those that had a second-hand trampoline or a trampoline given to them as a gift 33.8% (n=27) said it was between 1 and 2 years old, 33.8% said it was between 3 and 4 years old, 18.8% (n=15) said it was between 5 and 9 years old, 7.5% (n=6) said it was more than 10 years old, and 6.3% (n=5) said it was less than 1 year old.

When purchasing the trampoline 63.1% (n=306) of participants were provided with safety instructions, 54.8% (n=266) were provided with installation tips, 49.3% (n=239) were provided with general advice, and 19% (n=92) were not provided with any information when purchasing the trampoline (see Figure 6). Approximately 53% (n=248) said that the trampoline manufacturer provided information about the trampoline at the time of purchase, 24.6% (n=115) said it was provided by a general store retailer, 13% (n=61) said it was provided by a sporting retailer, 8.8% (n=41) were provided with information by a friend or relative, and the remaining 0.6% (n=3) received information from other sources.

Figure 6: Information trampoline owners were provided with at the time of purchase



Of the people who were provided with information, 40.4% (n=196) of them remembered the information provided and kept some of the booklets/brochures, 27.4% (n=133) did not remember any of the information provided nor did they keep any of the booklets/brochures, 19% (n=92) remembered the information but did not keep any of the booklets/brochures provided, and the remaining 13.2% (n=64) did not remember any of the information provided but kept some of the booklets/brochures.

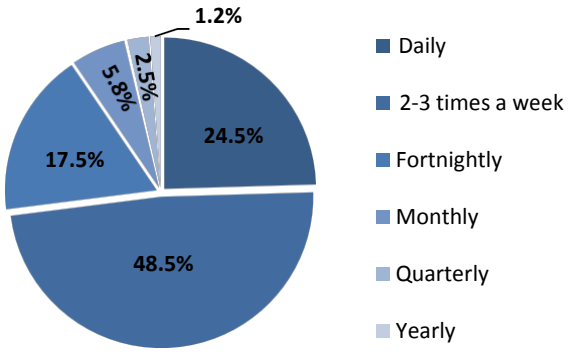
Participants were then asked about the installation of their trampoline. Those who said they were involved in installing their trampoline accounted for 52.8% (n=256) of the participants, 52.6% (n=255) reported that their partner was involved with installing the trampoline, 19.4% (n=94) said that a friend/relative was involved, 2.3% (n=11) said a retailer was involved, 1.6% (n=8) said a manufacturer was involved, 1.2% (n=6) were unsure, 0.8% (n=4) said a contractor was involved, and 0.2% (n=1) said two children were involved with installing the trampoline. When comparing genders, males were more likely to install the trampoline themselves accounting for 81.1% (n=137) compared to 37.3% (n=210) of the females. Males were also more likely to have a contractor, retailer or manufacturer involved in the trampoline installation process accounting for 8.3% (n=14) compared to only 2.9% (n=9) of females.

The participants who read the instructions and warnings before allowing their children to use the trampoline accounted for 47.6% (n=231) of those who completed the survey, 21.4% (n=104) reported that their partner read the instructions and warnings before use, 19.4%

(n=94) said both their partner and themselves read the instructions and warnings, while 11.5% (n=56) said neither their partner or themselves read the instructions and warnings before use.

A total of 48.5% (n=235) of parents reported that their child/children use the trampoline 2 to 3 times a week, 24.5% (n=119) said the trampoline is used daily by their children, 17.5% (n=85) said it is used fortnightly, 5.8% (n=28) reported that it is used monthly, 2.5% (n=12) said quarterly, and 1.2% (n=6) Yearly (see Figure 7).

Figure 7: The number of times children use a trampoline

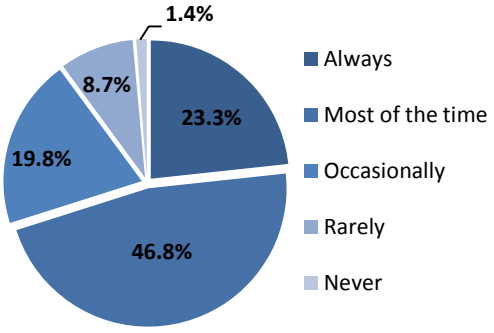


The most common time of day for the trampoline to be used was reported as the afternoon, accounting for an average of 77.6% (n=376) responses across the 7 days of the week. When looking at each day of the week it is evident that the trampoline gets used more often on weekend (Saturday/Sunday) than weekdays accounting for an average of 46.8% (n=227) of responses. When combining the day and time, participants reported that the most common day and time of the week for the trampoline to be used is a Saturday/Sunday afternoon (80%, n=388). Participants reported that the lowest use of the trampoline occurs Monday to Friday during the middle of the day (9.9%, n=48).

The majority of the trampolines are located on grass accounting for 78.6% (n=381), 8.0% (n=39) are located on sand, 7.6% (n=37) on paving, 3.7% (n=18) on woodchips, 1.6% (n=8) on rubber, and 0.4% (n=2) on other surfaces. Approximately 50% (n=243) of the trampolines are positioned in partial sun, 32.6% (n=158) are in full sun, 21.9% (n=106) are shaded, 14.2% (n=69) are positioned more than 1 metre away from structures/trees, and 8.7% (n=42) are positioned less than 1 metre away from structures/trees.

Many parents believe that children should be supervised by an adult whilst using the trampoline (73%, n=354). When reporting on the level of adult supervision 46.8% of the participants said that an adult supervises their child/children most of the time, 23.3% said they always supervise, 19.8% said they occasionally supervise, 8.7% said they rarely supervise, and the remaining 1.4% said their child/children is never supervised by an adult whilst using the trampoline (see Figure 8).

Figure 8: Level of adult supervision



Participants were also asked about the lifespan of each part of the trampoline. The majority of participants believed that the net had a lifespan of between 1 and 3 years (46.2%, n=224), the mat between 4 and 6 years (44.1%, n=214), pads between 1 and 3 years (45.8%, n=222), springs between 4 and 6 years (42.1%, n=204), and the frame between 4 and 6 years (33.8%, n=164).

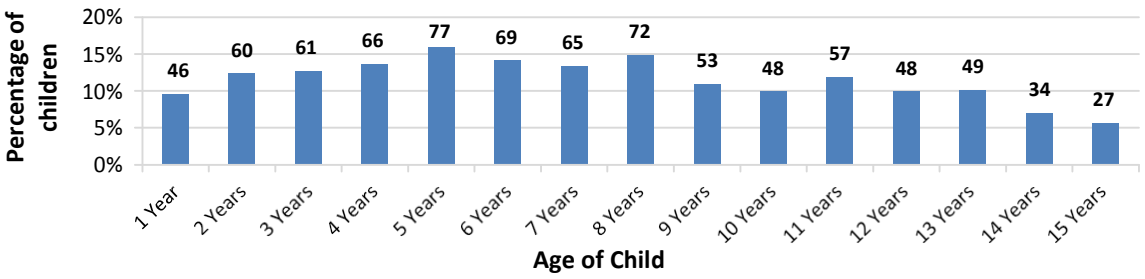
The participants who are trampoline owners reported that they check their trampoline for wear and tear monthly (30.9%, n=150), 20.6% (n=100) check their trampoline 6 monthly, 15.1% (n=73) never check their trampoline, 13.6% (n=66) check their trampoline fortnightly, 12.2% (n=59) check their trampoline weekly, and 7.6% (n=37) check their trampoline yearly for wear and tear.

Participants completing the survey reported on replacing parts of the trampoline, 56.9% (n=276) said they have not replaced any parts due to wear and tear, 19.8% (n=96) have replaced the net, 18.4% (89) have replaced the mat, 17.3% (n=84) have replaced the pads, 9.1% (n=44) have replaced the springs, and 3.3% (n=16) have replaced the frame.

Almost half (48.9%, n=237) of the participants said the maximum number of children who use the trampoline at the same time is two. Only 18.8% (n=91) of participants reported that children use their trampoline one at a time (in line with the recommendations). The remaining responses reported that multiple children use the trampoline at the same time, with three children accounting for 22.1% (n=107) of responses, four children accounting for 8.2% (n=40) of responses, and finally 2.1% (n=10) reported that five or more children use the trampoline at the same time.

Many children using the trampoline are 5 years old (15.9%, n=77), which is followed by 8 year olds (14.8%, n=72), and those who use the trampolines the least are 15 year olds (5.6%, n=27) (see Figure 9). Children under 6 years old account for almost half (40.2%, n=456) of the children reported, while the remaining are 6 years old and over (59.8%, n=678), this means that each age group under 6 years old accounts for an average of 8% of the total children compared to an average of 6% of the total children in each age group of those between 6 and 15 years old.

Figure 9: Use of the Trampoline by age of the child



Padding covering the frames and springs is the most common feature (76.3%, n=370) reported on the trampolines owned by participants surveyed. This is followed by a net or enclosure (64.7%, n=314), removable ladder or step (26.8%, n=130), SpringFree® trampoline (11.8%, n=57), and below ground trampolines are least common (2.5%, n=12). Of those who had a net or enclosure on their trampoline, almost half (48.6%, n=187) of the participants had a net between 1 and 2 years old, some nets were 3 to 4 years old (24.7%, n=95), others were less than 1 year old (23.1%, n=89), and the remaining (3.6%, n=14) were 5 or more years old.

When asked what the lifespan of the trampoline net is, 47.6% (n=231) of the participants thought that they lasted between 1 to 3 years, 32.0% (n=155) participants thought they lasted for about 4 to 6 years, 10.5% (n=51) of the participants said less than 1 year, while 4.9% (n=24) said they lasted between 7 and 9 years, and the remaining 4.9% believed they lasted for 10 or more years.

Just over half of those surveyed (53.4%, n=259) believed that having a net means less supervision is required and 53.8% (n=261) of the participants also thought that having a net affects the decision of where they would position the trampoline. Most of the parents said that they do not store their trampoline during certain periods of the year accounting for 75.7% (n=367), and only 24.3% (n=118) said they do store the trampoline during certain periods of the year.

3.2 Short survey

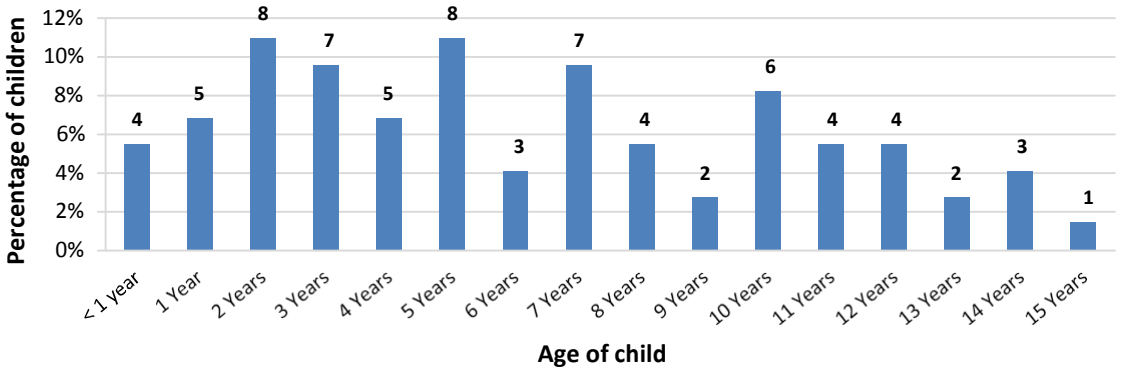
3.2.1 Demographics

Thirty nine participants completed the short survey and all of them lived in metropolitan areas. The participants were drawn from different states/territories in Australia with 48.7% (n=19) from Western Australia, 38.5% (n=15) from Queensland, 5.1% (n=2) from South Australia, 5.1% (n=2) from New South Wales, and 2.6% (n=1) from the Australian Capital Territory.

A large number of parents responding to the survey were aged between 36 and 45 years old accounting for 66.7% (n=26). Just over half of the children included in the survey were male accounting for 50.7% (n=37), 42.5% were female (n=31) and the gender for the remaining 12.8% (n=5) was not reported.

Just over half of the children included in the survey were under 6 years of age accounting for 50.7% (n=37), resulting in children under 6 years old accounting for an average of 10.1% of the children using trampolines, compared to only 4.9% of the children in each age group of children whom are 6 years and older (see Figure 10).

Figure 10: Use of the Trampoline by age of the child



A large proportion of the children last had access to a trampoline between 1 and 5 months ago accounting for 20.5% (n=8), 15.4% (n=6) had access 1 to 3 weeks ago, 15.4% had access 1 to 2 years ago, 7.7% (n=3) had access 6 to 11 months ago, 5.1% (n=2) had access more than 2 years ago, and 23.1% (n=9) did not report when their child last had access to a trampoline.

3.2.2 Perception of Safety

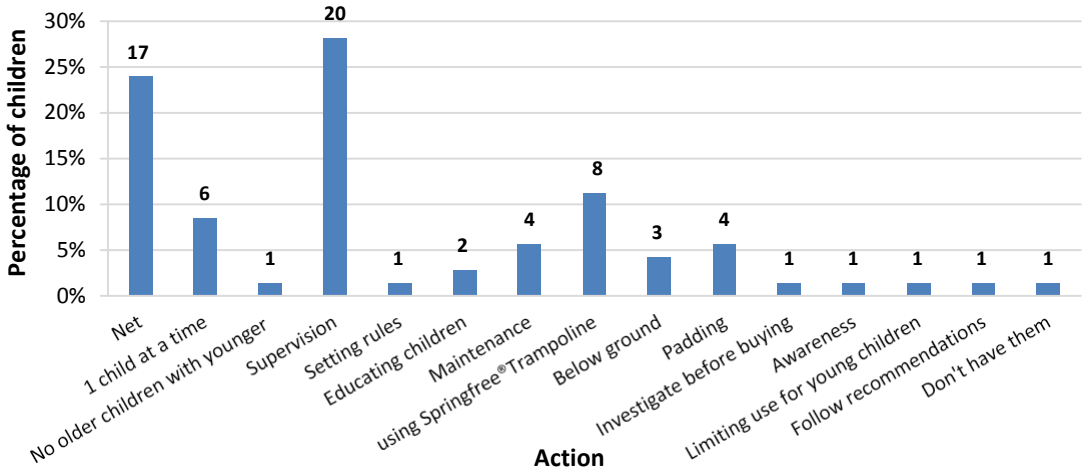
In regards to the perception of safety, 64.1% (n=25) reported that the safety level of a trampoline is moderate, 20.5% (n=8) believe a trampoline is dangerous and 12.8% (n=5) believe a trampoline is safe. One person (2.6%) reported that a trampoline is somewhere between moderate and dangerous, while no participants believed that a trampoline was either extremely safe or extremely dangerous.

Participants that ranked trampoline safety as being moderate provided reasons such as, a net being present, children following the rules, the placement of the trampoline, and whether an adult is supervising as affecting their perception of safety. Those that believe a trampoline is dangerous stated this is because it is easy to get injured, collisions with others occur, the springs are dangerous, have heard about broken limbs, children don't have a sense of danger and an adult must always supervise. The two main reasons why parents believe a trampoline is safe is when a net is present and when an adult supervises.

3.2.3 Knowledge of Injury Risks

The majority of the participants (84.6%, n=33) were aware of the risks associated with trampolining. The most commonly reported risks were fractures (25%, n=19), followed by falling off the trampoline and/or falls (21.1%, n=16), head/neck/spinal injuries (10.5%, n=8), and injuries resulting from the springs (10.5%). In response to reducing risks, of those parents who responded 26.7% (n=20) said that supervision is important, 22.7% (n=17) said the use of a net will reduce the risk of injury (see Figure 11).

Figure 11: Ways to reduce injury risks



Of those who responded, 65.5% (n=19) of the participants said that knowing the risks would change their behaviour, while the remaining 34.5% (n=10) people believe that knowing the risks would not influence their behaviour.

3.2.4 Previous experience with Trampoline Injuries

Nineteen participants (48.7%) knew a child that had been injured on a trampoline. Of these, 63.1% (n=12) said that the child they knew was someone else's child, while 36.8% (n=7) said it was their own child. Parents were asked to report on what the child was doing at the time, of the activities reported 50% (n=7) of the incidents occurred whilst jumping on the trampoline with other children, this was followed by injuries occurring after attempting tricks/stunts which accounted for 21.4% (n=3). The most common trampoline related injury is a fracture accounting for 63.2% (n=12) of the injuries and 63.2% (n=12) of the time children needed to be admitted to hospital.

The most commonly cited reason why children no longer have access to a trampoline is because they do not have one at home (19.4%, n=6), it became unsafe due to deterioration (19.4%), or that they had moved house (16.1%, n=5).

The majority of participants said they would let their child use a trampoline again in the future (84.6%, n=33). The reasons provided included if an adult was supervising (15.9%, n=7), if the trampoline is in good working order (13.6%, n=6), because it is fun (9.1%, n=4) and because it burns energy (6.8%, n=3). Of those who said they would not let their child use a trampoline in the future (7.7%, n=3) said this is because trampolines are dangerous. Some participants choose not respond as to whether or not they would let their child use a trampoline in the future.

3.2.5 Raising Safety Awareness

Survey participants reported that they would go to Kidsafe for trampoline safety information (24.8%, n=26), look at a website (20%, n=21), or contact the trampoline manufacturer (17.1%, n=18). Presenting the information as a fact sheet was the most popular choice (26.6%, n=21), followed by presenting the information as a brochure (24.1%, n=19), and then online/app was also a common choice (19%, n=15).

Opportunities were given to provide further comments on trampoline safety and use. The comments received included the provision of a guide recommending trampoline features, ensuring children know the trampoline is a sport and not a toy, ensuring awareness of the risks and rules, and the importance of maintenance of the trampoline and supervision.

3.3 Focus groups

Due to the nature of the focus groups it was difficult to gather numbers and calculate proportions. The following results provide the consensus of stated opinions during the discussions.

3.3.1 Demographics

Approximately 21 parents participated in one of five focus group sessions, and all of these participants were female. The children of the participants were aged between 0 and 11 years old, with majority of the children aged 7 years old or under.

3.3.2 Perception of Safety

During discussions, two focus groups (40%) agreed that trampolines are safe when a net is present. Two (40%) of the focus groups also agreed that trampolines without a net are either dangerous or extremely dangerous. However, there were also other factors that affected the decision on whether or not a trampoline is safe. This included if there were many children on the trampoline or if there were younger children using the trampoline. The participants felt that trampolines were more dangerous in these circumstances.

3.3.3 Knowledge of Injury Risks

All of the parents who participated in trampoline focus groups were aware of the risks associated with trampolining. They did not know the number of injuries associated with trampolining; however, they knew what type of injuries could be sustained from a trampolining incident and the type of activities which could result in a trampoline related injury. Three (60%) of the groups discussed fractures as being an injury risk, two (40%) groups mentioned concussions, one (20%) group mentioned sprains as a risk, one (20%) group also mentioned shoulder/elbow injuries, one (20%) group mentioned jarring of the knee, and one (20%) group also mentioned winding as an injury risk. The type of activities parents said children engage in whilst using the trampoline which increase their risk of injury include, jumping with other

children on the trampoline at the same time, doing stunts/tricks, jumping from other structures/objects onto the trampoline, and being bounced onto whilst sitting underneath the trampoline.

When asked about reducing injury risk, all of the focus groups agreed that supervision would be the most effective way to reduce the risk of injury. This was followed by the use of nets accounting for 40% (n=2) of the groups. It was also felt that limiting the number of children (40%, n=2) on the trampoline would reduce the risk of injury, however, many parents felt that children should not be wrapped in cotton wool and need to take risks and experience things for themselves. A few parents identified that teaching children how to use a trampoline or learning coordination skills could also reduce the risk of trampoline related injuries.

3.3.4 Previous experience with Trampoline Injuries

The majority of focus group participants knew a child that had injured themselves whilst using a trampoline. Many mentioned that injuries occurred whilst jumping on the trampoline with other children. Other activities included playing with balls on the trampoline, doing a stunt, using a wet trampoline, falling through a broken mat, and falling out of a net where the door was left open. The injuries sustained include blood noses, bruising, head injuries, jarred knees, sprains and fractures. The treatment required was either first aid at home or admission to hospital. Of the injuries sustained, three cases were diagnosed as head injuries and two of the children are still affected by the injury and may have issues into the future.

Only a few participants reported that their child uses the trampoline one at a time, and the remaining parents reported that their children use the trampoline with others, sometimes on their own, but it really depends on who is around. One parent reported that she encourages her children to use the trampoline with other children.

During the focus groups, one (20%) group agreed that they do not supervise their children as they believe their children are old enough to be on the trampoline without supervision. Two (40%) groups agreed that they supervise their children most of the time whilst using the trampoline; however they are usually doing other things such as cooking, where they will watch their children through a window. One (20%) group agreed that they always supervise their children, whilst the remaining group had mixed opinions where half of the parents said they never supervise and the other half said they always supervise.

When asked ‘do you think children need to be supervised whilst using the trampoline?’, all of the groups agreed that that it is dependent on certain factors. The two major factors which influenced the level of supervision included the age of the child and the presence of a net. Two (40%) groups agreed that once children reach ‘school age’ they do not need supervision and if there is a net one (20%) group said that supervision is no longer required. Although, there were

a few parents who thought that once children get older they tend to engage in more risky activities such as bouncing off the net and that they need to be supervised more closely whilst using the trampoline.

3.3.5 Raising Safety Awareness

Three (60%) of the groups agreed that they would look online for information on trampoline safety and would look at reviews or consumer choice websites/magazines. A few participants also said a TV campaign would be a good reminder about trampoline safety. Parents from regional areas said they would not look at any information on trampoline safety at all, and they would just use their common sense or past experience.

Statistics and images were chosen by the participants as being the most effective way to present the information on trampoline safety. Images were said to be quick and to the point, and some parents thought negative images would be good as a scare tactic, while others said that using positive images to go through the safety steps would be more effective.

When choosing trampolines, participants said they would first look at the price then look at what type of equipment is available for trampolines. Some of the parents would also look at reviews or talk to others beforehand, and maybe look at the standards for Australia if available to them.

Participants identified that when trying to prevent trampoline injuries the key messages should be ‘supervise your children’, ‘use at your own risk’, and ‘use the trampoline one at a time’. Several participants also identified that a key message should be that add on features don’t make it unnecessary to supervise, as this can be very misleading. All the groups agreed that children should be taught how to use the trampoline properly.

In general, participants stated that having too many safety features could lead to a false sense of security and trampoline safety issues are age dependent. Some participants also felt that when their net became old and worn they would happily take it down and let their children jump on the trampoline without a net rather than replace it.

4. Discussion

The results of this study demonstrate that trampoline users do not appear to be following the safety guidelines for trampolining. These safety guidelines are provided in the packaging of trampoline purchases, and are also available at other organisations. When considering the overall results from the three survey tools, it is evident that there are three major safety guidelines that are being ignored. These guidelines include: *an adult must supervise at all times*, *children under 6 years old should not use the trampoline*, *and only one child at a time should use the trampoline*.

4.1 Adult supervision

A study by Wooten and Harris (2009) demonstrates that adult supervision rates are low, where an average of 50% of the parents reported that they supervise their children whilst using the trampoline. Supervision rates demonstrated in this study are slightly higher, however, when examining the *level* of supervision, it is evident that only 23.3% of the participants said that an adult 'always' supervises their child whilst using the trampoline. It is also demonstrated in this study that supervision levels are affected by other factors, for example 53.4% (n=261) of the participants believe that having a net means less supervision is required. Studies have shown that there has been some reduction in the rate of injuries in relation to the trampoline design such as injuries associated with the springs/frames or falling off the trampoline, but there have also been increases in trampoline related injuries due to self-related injuries, or injuries caused by other trampoline jumpers (Eager et al. 2012). It is important parents understand that supervision is required regardless of other factors as the child's safety is not guaranteed. Having a net/padding will not stop the child from engaging in risky activities on the trampoline, and may in fact facilitate them.

4.2 Age recommendation

The safety guidelines also recommend that children under 6 years old do not use the trampoline, as at this age children are not developmentally ready for this type of activity. This study demonstrates that many children using trampolines are under 6 years old (on average 45.5%) and even children under 1 year old are reported to be using trampolines. A similar study also demonstrates that it is not uncommon for children under 6 years old to use a trampoline, where 25.7% of the children using trampolines are under 6 years old (Eberl et al. 2009). A pilot study completed earlier this year at Princess Margaret Hospital for Children Emergency Department demonstrates that the largest number of trampoline injury presentations occurred in the 0 to 4 year old age group accounting for 45.6% of the children presenting with trampoline related injuries (Leeds et al. 2012). This suggests trampolines are not suitable for young children and supports the age recommendations which are already in place in the safety guidelines provided.

4.3 Number of children using the trampoline

Another risk factor that was also identified during this study is that multiple children are using the trampoline at the same time. Approximately 71% of the participants in this study said that they allow two or three children on the trampoline at the same time. Having multiple children on the trampoline is the cause of a large number of trampolining injuries. Across the three surveys an average of 36.3% of the reported injuries occurred when multiple children were using the trampoline at the same time. Similar studies have also demonstrated that having two or more children on the trampoline increases the risk of injury. Nysted & Drogset's (2006) study reported that 13% of the injuries resulted from jumping on the trampoline with others.

4.4 Provision of safety information

Currently the safety guidelines are provided in the trampoline packaging and almost half of the participants (40.6%) said that they do not remember the information that was provided in the pamphlets/booklets. When asked where they would look for trampoline safety information a relevant Website was the most common choice, accounting for an average of 41.3% of the responses in both the online and short written survey. The next most popular choice was approaching Kidsafe, which accounted for an average of 36.15% of the total participants. This was followed by contacting a trampoline manufacturer (an average of 35.7%).

This study highlights the need to raise trampoline safety awareness among the Australian population. Although there are safety guidelines currently available, they are being ignored or are being delivered at the wrong point in time. Currently the main safety guidelines are being provided in the trampoline packaging at the time of purchase, but there are still trampoline owners and users in the population who are not familiar with/do not follow the current guidelines.

This study also demonstrates that the safety guidelines information is currently provided to one relevant group of people involved in the use of the trampoline. Fathers are more likely to install a trampoline, thus are more likely to read the trampoline manual in which the safety guidelines are included. This however raises the question as to whether or not mothers are also reading the trampoline manuals which provide safety recommendations, as mothers appear more likely to be the supervisor of their child on the trampoline. A further issue with having the guidelines in the trampoline packaging is that this also fails to target those who are purely trampoline users and not owners. Children as the predominant users are not receiving direct information of safe trampoline use. As these factors may be contributing to the lack of awareness on trampoline safety among the population, it is important that we ensure the correct group is provided with trampoline safety information at the point at which this information is useful.

During focus the groups the key safety messages parents believe would be important included '*use at your own risk*', '*add on features don't make it unnecessary to supervise'*, and '*children should be taught how to use the trampoline properly'*. In regards to how focus group participants would like the information presented, the most popular choices were a fact sheet (26.6%), brochure (24.1%) and online/app (19%).

4.5 Limitations

There were some inherent limitations in conducting this type of study. This included the small sample size for the short survey as most people approached to participate had a trampoline at home. It was difficult to find families that did not have access to a trampoline. This could also reflect parents' perceptions on trampoline safety, as the majority of the participants in the online survey, short survey and focus groups believe that trampoline safety is moderate; hence they were happy to allow their children to use a trampoline. Also of those children who no longer had access to a trampoline, 84.6% of the parents said they would allow their child to use a trampoline in the future.

Reporting bias may be another limitation in this study which could affect the validity of some results. Due to social norms, parents may not feel comfortable reporting that they do not supervise their child whilst using the trampoline; thus supervision rates may be overrepresented. This could be more apparent in the focus group situation.

A further limitation may be sample bias for both the short survey and the focus groups when considering sources for safety information. The short surveys were only distributed through Kidsafe offices and group facilitators identified themselves as Kidsafe staff before conducting the focus groups. This may explain why larger numbers of participants in the short survey and focus groups reported that Kidsafe would be one of the places they would go to look for information on trampoline safety when compared to participants in the online survey.

The focus groups were also conducted during a busy time of year so it was difficult to attract parents with older children. The busy school year was ending so focus groups were only conducted with parents at playgroups. This was however beneficial as this gave insight as to how young children were using trampolines and the majority of these parents had older children.

Another limitation with conducting this type of focus group was the data could only be presented on the consensus of the group discussions. It is difficult to collect individual opinions.

5. Recommendations

5.1 Timeliness and targeting of safety information

The timing and targeting of safety information plays an important role in the success of behaviour change. There are three relevant groups that require this safety information, the people who build the trampoline (constructor); the person supervising users (supervisor); and the predominant user of the equipment (user; usually children). From this study it is evident that trampoline safety information is available, but is predominantly provided at one point in time and only targets one relevant group; the constructor. Although there are some small safety labels present on various nets and mats, the supervisor and user are not well targeted with relevant information. Within this study it is evident that the *constructor*, *supervisor* and *user* can be three separate people. It is recommended that there is an exploration on how these safety guidelines can be presented in a timely and relevant manner to the three separate target groups.

5.2 Website

Based on the participants preference of accessing trampoline safety information from the World Wide Web, it is recommended that a Website or websites be developed to promote trampoline safety. This contemporary method of providing information should be targeted at all three relevant groups; the *constructor, supervisor* and *user.* This may require a portal system on one website or three separate home pages. Using a Website(s) will provide access to trampoline safety information to a larger population and can be accessed at any time.

The site would provide statistics and a guide on 'what to do' and 'what not to do' when trampolining. It could Incorporate suggested key messages such as '*use at your own risk'*, '*add on features don't make it unnecessary to supervise*', and '*children should be taught how to use the trampoline properly'*. Targeted fact sheets and safety information would be provided. Information for the *constructor* would focus on maintenance, installation, and safety guidelines. Information provided for the *supervisor* would focus on the safety guidelines. And information for the user, predominantly children, would concentrate on safe use. This would utilise interactive media and more pictorial representations of the does and don'ts of safe trampolining.

5.3 Social Media campaign

Accompanying the website could be a targeted social media campaign to raise safety awareness across the Australian population. This would allow a safety campaign to reach a diverse number of people at different points in time. Relevant Social Media platforms would be used to target the *constructor, supervisor* and *user.* As an example Facebook & Twitter for the constructor; Facebook & Blogs for the supervisor; and YouTube for the user.

5.4 Mainstream media release

As this study shows a large discrepancy between the safety guidelines and the actual usage of trampolines, a mainstream media campaign is also recommended. This would be used to quickly raise awareness of the importance of the safety guidelines in reducing trampoline injuries. As this type of campaign is dependent on the available funding, the options could range from television commercials & newspaper advertisements to targeted media releases to relevant outlets. This for example could include tabloid current affairs programs & newspaper groups for *constructor* & *supervisor* groups; and children's program providers for the *user* group, i.e. Behind the News.

A traditional billboard, poster and brochure media campaign can also be utilised to target the various groups. The *constructor* can be targeted at the retail outlet; the *supervisor* through playgroups, schools & child care; and the *users* through schools.

5.5 Warning Tags

A further recommendation would be to reinforce the three major safety guidelines; *an adult must always supervise children using the trampoline*; *children under 6 years old should not use the trampoline;* and *one person at a time*, by making them more visible on the trampoline itself. Currently there are a small tags attached to the side of the trampoline mat stating '*Want to jump, keep it safe, one at a time*'. It is recommended that these warnings include messages promoting supervision, age recommendations and the safe number of users i.e. 'Are you watching your child? Is your child over 6 years old? One *person* at a time'.

It is also important that these messages are represented in an appropriate format and position for both the supervisor and user. The warnings could be in a larger & brighter font and represented by relevant pictorial images. The warnings should be visible to both the supervisor and the user. The positioning of the warning should also take into account that not all safety nets are being utilised.

6. Addressing limitations for future research

When undertaking further studies of this type certain steps could be taken to avoid some of the limitations.

To address the issue of *sample bias* the surveys could have been distributed to centres other than Kidsafe and the facilitators could be introduced as a researcher rather than a member of Kidsafe at the focus groups.

To avoid *reporting bias* the surveys could have been conducted as interview where the facilitator is able to gain the trust of the participant where he/she would feel more comfortable to respond openly.

The study could have also been completed during a different period of the year to facilitate the participation of more parents with school age children.

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