



Playground Research Report:

A Comparison of the Safety Risks and Health Benefits between Manufactured Playgrounds and Nature Playgrounds within a School Environment

Supported by:





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INTRODUCTION

Play is an essential part of childhood. It assists children in developing physical skills such as strength, coordination and balance as well as cognitive and emotional skills¹. Play environments can encourage children to be problem solvers, social, imaginative, creative and collaborative. Encouraging play is a positive method in increasing physical activity and subsequently assisting in the resolution of the obesity epidemic¹.

Playing outside is not just about letting off steam. It is a vital part of childhood that provides opportunities for children to learn and develop:

- Social Skills - when they play with other children they learn to communicate, share, collaborate and empathise with others.
- Imagination and creativity - outside play is often open-ended and children need to be creative about what and how games are played.
- Thinking and problem solving skills - as children assess risks and tackle new challenges they learn about having a go, persistence and perseverance and the success those attributes can bring.
- Sense of self - as they master new skills and play with other children they improve their competence and confidence in their own physical and social abilities.
- Sense of connection - to place, to peers, their local community and environment.
- Self-care skills - managing physical and social challenges helps children to learn about keeping themselves safe.

To support these broad learning outcomes, play spaces should include areas for active, free, quiet, social, imaginative, creative, exploratory and natural play. By inviting children to use their own initiative, explore possibilities and take chances, we can provide them with opportunities to learn.

Playgrounds are common areas for children to play and when compared to other settings, are considered to be a safe environment as they are generally away from traffic and other hazards which can be found outdoors^{2 3}. Although playground injuries account for only a small number of injuries to children, a large proportion result in hospital admission^{2 3}.

Playground injuries can be attributed to behavioural and environmental factors including:

- Use of equipment not suitable to the age or stage of development of the child
- Inappropriate use of equipment
- Lack of appropriate adult supervision
- Over-crowding
- Poor design or layout of equipment
- Lack of maintenance

Falls are the most common cause of playground related injury⁴. Between 2002 and 2004 in Australia, 12,091 children aged between zero and 14 presented to a hospital with a playground fall injury, accounting for 9.8 percent of total hospital injury separations within this age group⁵. In Western Australia playground injuries have increased, accounting for 5.7 percent of the total injuries to the Princess Margaret Hospital Emergency Department⁴.



Whilst Kidsafe WA can report on the number of injuries occurring on playgrounds, it is difficult to distinguish the type of playground these injuries are sustained on and the mechanisms that led to the injury.

In 2015 Kidsafe WA developed a research project to compare the safety risks and health benefits between manufactured playgrounds and nature playgrounds within a school environment. The information gathered will provide evidence to support Kidsafe WA's Playground Advisory Service to distribute this information to schools across WA, with the aim of increasing the physical and mental wellbeing of WA children.

METHOD

Kidsafe WA conducted an online quantitative survey to identify and compare the safety risks and health benefits between manufactured playgrounds and nature playgrounds within the school environment.

- *Manufactured playgrounds* were defined as; playgrounds which use manmade materials and predominantly supports structured play.
- *Nature playgrounds* were defined as; playgrounds which use natural materials and predominantly encourage unstructured play.

Ethics were obtained from the Government of Western Australia Department of Education. All Western Australian government primary schools were asked to participate in the survey, with schools contacted via email. School emails were obtained through the Government of Western Australia Department of Education: Schools Online Directory and were addressed to the principal. The invitational email was accompanied by supporting documents outlining the aim and objectives of the survey. Participation in the research project was at the decision of the invited schools and individual staff members.

The survey targeted principals, administrators, early years or primary school teachers and asked them to complete a 15 minute survey about their perception of the playgrounds at their school. The survey remained open for six weeks, during which time participants could complete the survey at their leisure. Only one person per school was required to complete the survey. Overall 101 participants responded to the survey (Table 1).

Table 1: Rate of Respondents

Distributed	Responded	Response Rate
604	101	16.7%

The survey was conducted online using the survey platform Survey Monkey. It included questions about demographics, the number and use of the school playgrounds, perceived risk and benefits and the number and type of incidents that occurred on school playgrounds during the past year including minor and serious injuries.

- *Minor Injuries* were defined as; physical damage that did not require hospital treatment.
- *Serious injuries* were defined as; physical damage that required hospital treatment.

Participants were not required to complete all questions and could choose to omit any as required. See *Appendix One for Survey Questions*.

The information gathered will assist Kidsafe WA to better understand the safety risks and health benefits of manufactured playgrounds and nature playgrounds, with the aim of increasing the physical and mental well-being of children.

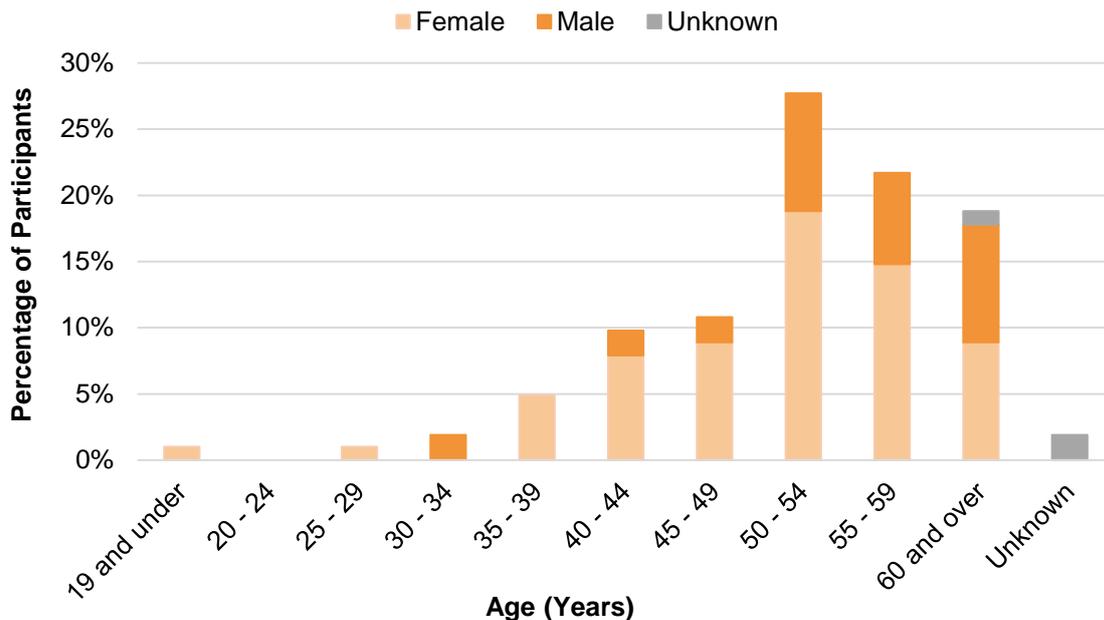
RESULTS

This section of the report provides the major findings from the survey.

Demographic Information

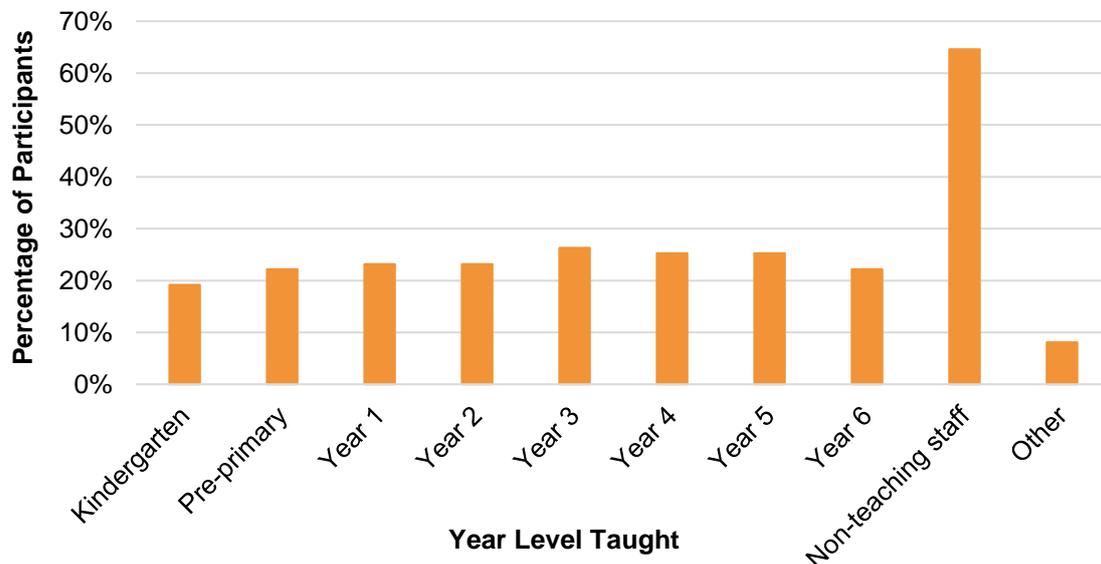
The majority of participants were female, accounting for 68.4 percent (n=67) with males the remaining 31.6 percent (n=31) (Figure 1). More than two-thirds of participants were over 50 years of age (69.7%, n=69) (Figure 1).

Figure 1: Age and Gender of Participants



A large proportion of participants (78.8%, n=78) identified themselves as the principal of their school, with a further 14.1 percent (n=14) identifying as the deputy principal. In addition to this, 7.1 percent (n=7) identified as a teacher and 3.0 percent (n=3) as other. Similarly the majority of participants identified themselves as non-teaching staff at their school (64.6%, n=64) (Figure 2).

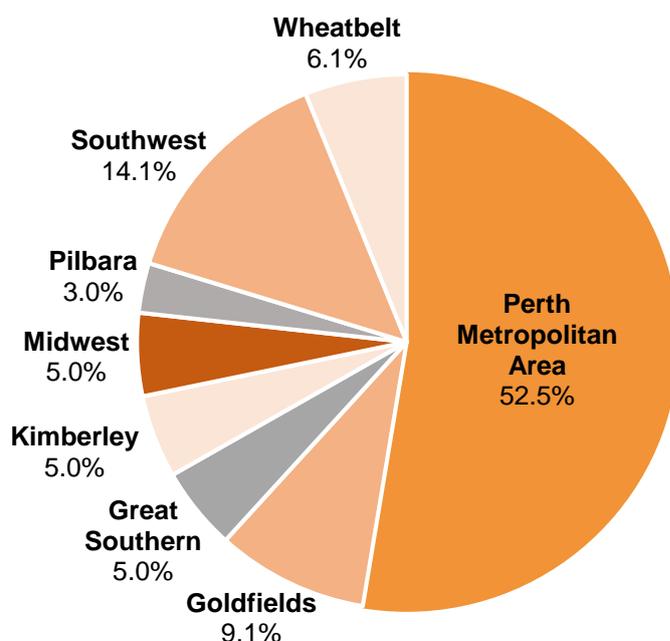
Figure 2: Year Level Taught by Participants



School Location

Just over half of the participants were from schools located within the Perth Metropolitan Area (52.5%, n=52). A further 39.5 percent were from schools located in Regional Western Australia (39.4%, n=39), with the remaining from Remote Western Australia (8.1%, n=8). The Southwest and the Goldfields had the highest number of regional and remote schools represented in the survey, accounting for 14.1 percent (n=14) and 9.1 percent (n=9) respectively (Figure 3).

Figure 3: School Location of Participant



School Playground Facilities

Three-quarters of participants indicated that their school (74.8%, n=74) had more than three playgrounds on the premises. The remaining quarter had either two playgrounds (14.1%, n=14) or one or less playgrounds (11.1%, n=11) (Table 2).

Table 2: Number of Playgrounds

Number of Playgrounds	Number of Schools	Percentage of Schools
1 or less	11	11.1%
2	14	14.1%
3	21	21.2%
4	25	25.3%
5 or more	28	28.3%

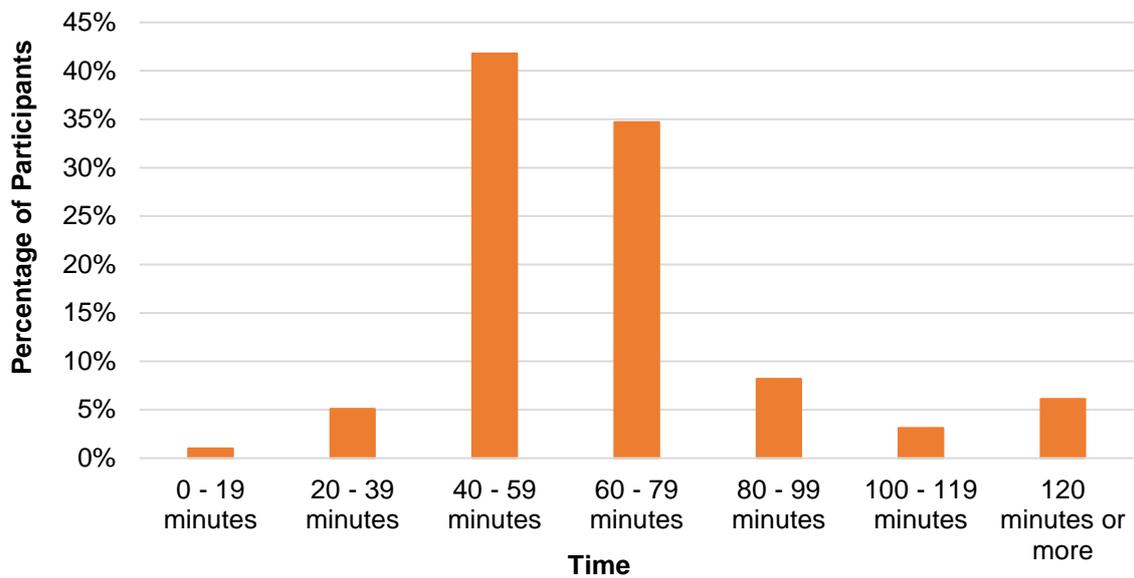
All participant's schools had a manufactured playground on their grounds and just under half (43.9%, n=43) had a nature playground.

All students were able to access their schools playground facilities during recess and lunch, with a further 28.6 percent (n=28) able to access facilities before school and 41.8 percent (n=41) after school. Some schools allowed students to also access playground facilities

outside of school hours with parental supervision and during class activities as determined by the classroom or physical education teacher.

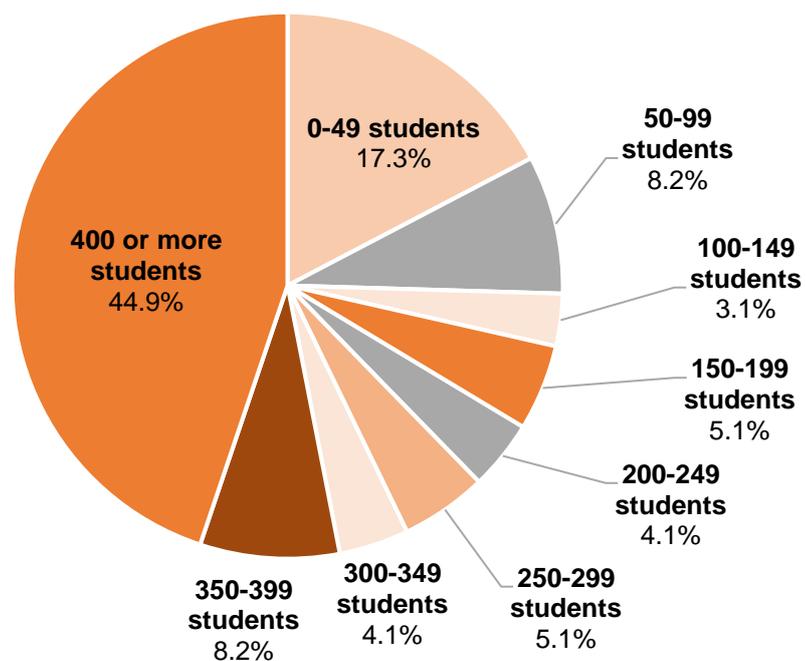
The majority of participant's schools (76.5%, n=75) allowed students between 40 and 80 minutes of access to their playground facilities per day (Figure 4).

Figure 4: Minutes per Day Students can Access their School's Playground Facilities



A large proportion of participant (44.9%, n=44) indicated that their school had over 400 students that accessed their school's playground facilities (Figure 5).

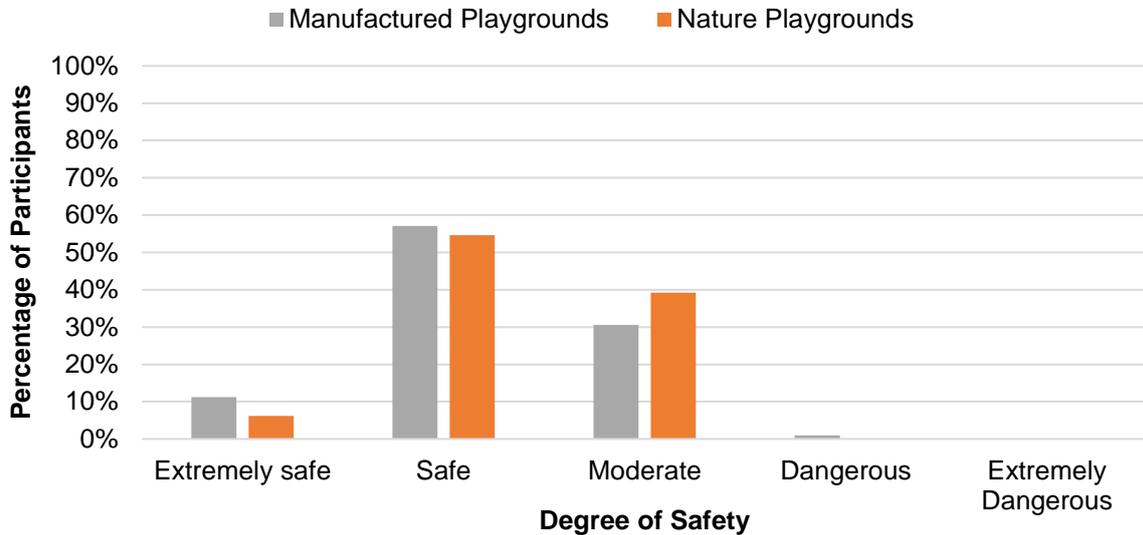
Figure 5: Number of Students at Participants Schools



Perceptions of Manufactured and Nature Playgrounds

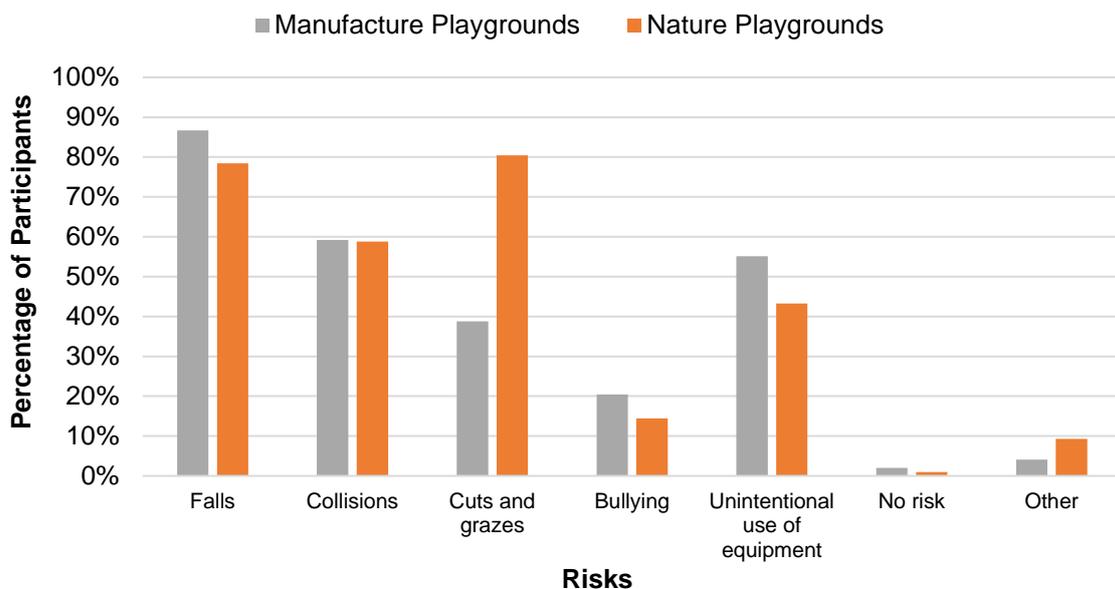
Almost all participants perceived both manufactured and nature playgrounds to be either moderately safe, safe or extremely safe (Figure 6). Slight difference between manufactured and nature playgrounds were evident with 11.2 percent (n=11) of participants perceiving manufactured playgrounds as extremely safe compared to 6.2 percent (n=6) perceiving nature playgrounds to be extremely safe.

Figure 6: Perception of Safety Associated with Manufactured and Nature Playgrounds



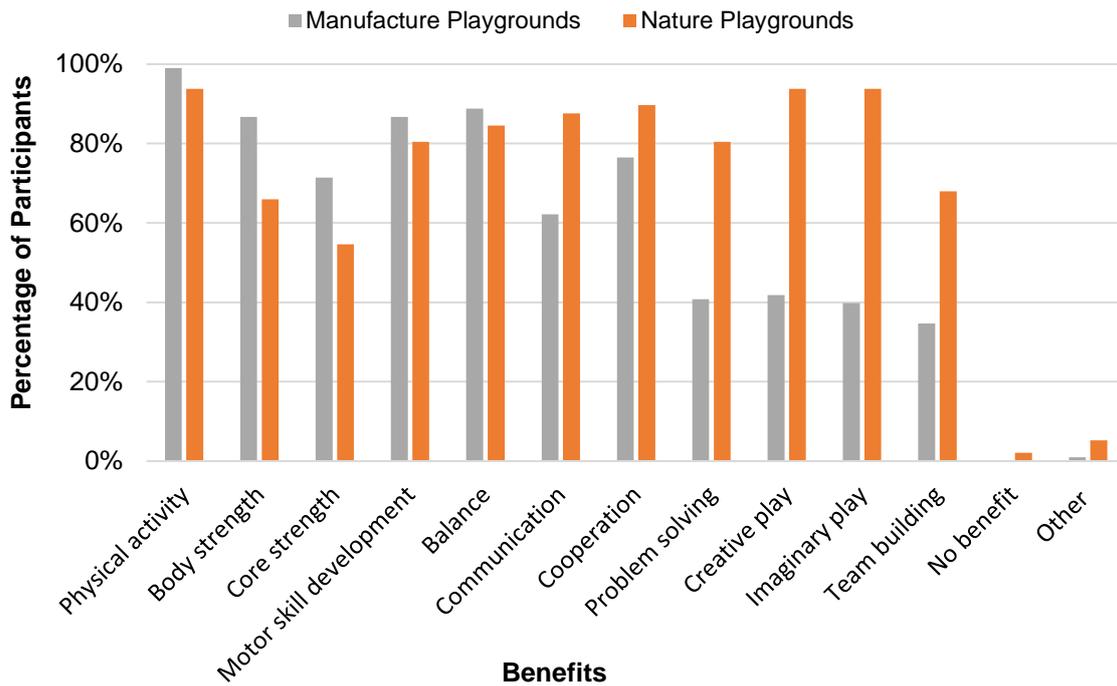
Participants perceived similar risks associated with manufactured and nature playgrounds (Figure 7). One of the main differences is seen in cuts and grazes where 38.8 percent (n=38) of participants perceived it to be an associated risk of manufactured playgrounds in comparison to 80.4 percent (n=80) for nature playgrounds (Figure 7).

Figure 7: Perception of Risks Associated with Manufactured and Nature Playgrounds



Participants perceived benefits for both manufactured and nature playgrounds (Figure 8). Particular differences stood out in communication, problem solving, creative play, imaginary play and team building, where nature playgrounds were perceived as having more benefit in comparison to manufactured play (Figure 8).

Figure 8: Perception of Benefits Associated with Manufactured and Nature Playgrounds

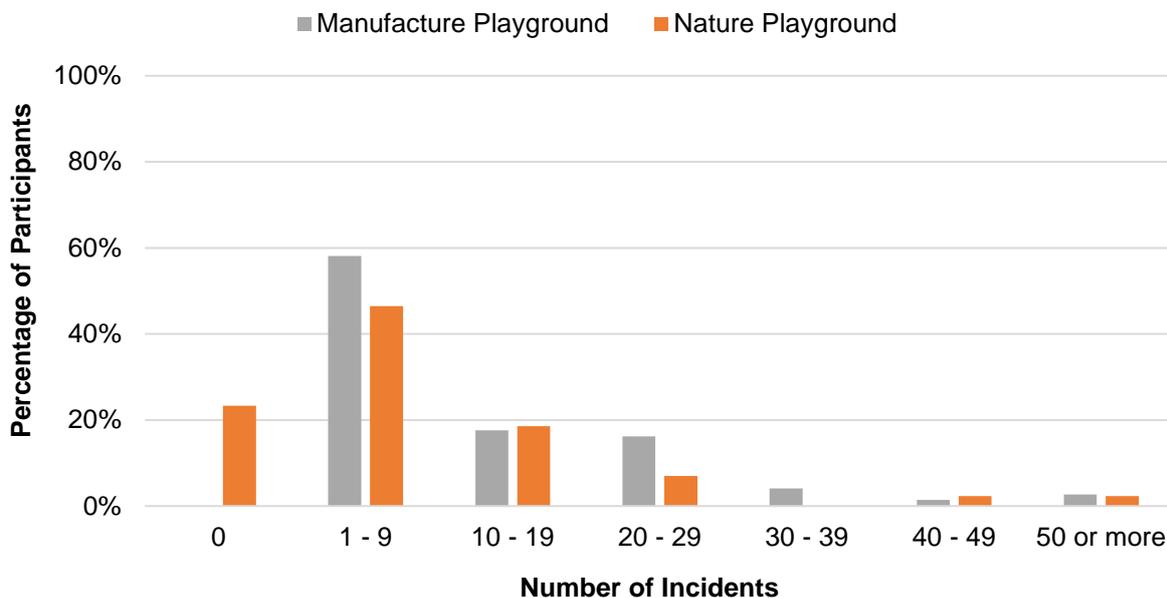


Playground Related Incidents

Over three quarters (79.4%, n=77) of participants indicated that their school recorded incidents that occurred on their school’s playground facilities. Those participants were asked to identify how many minor injuries, serious injuries and interpersonal conflicts or bullying incidents occurred on their schools playground facilities during the 2015 school year.

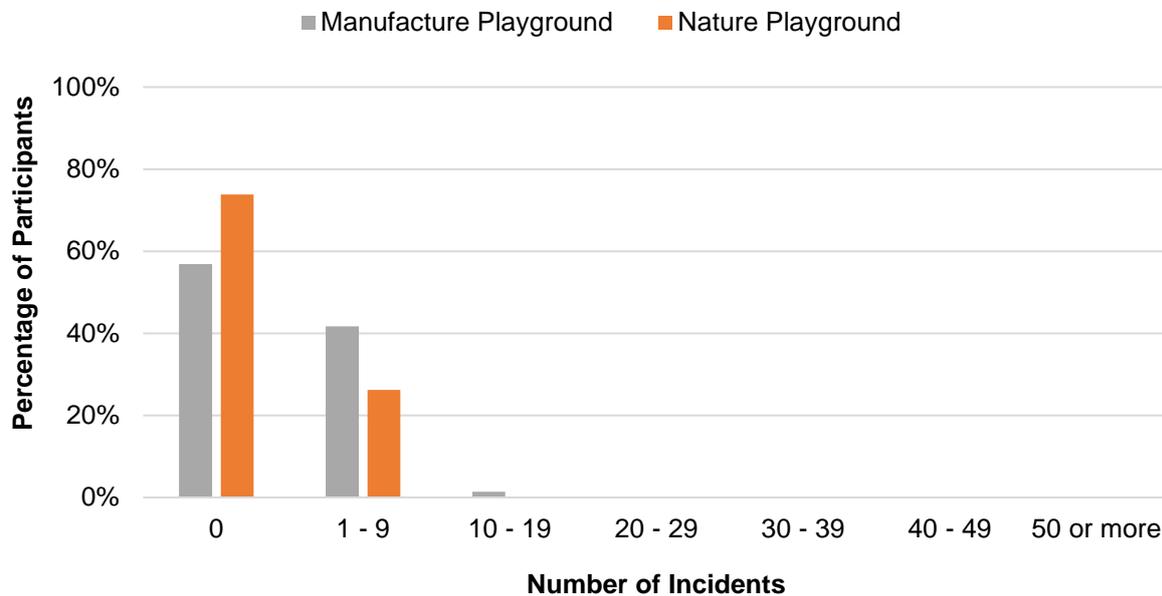
Of participants who recorded incidents that occurred on their schools playground facilities, 23.3 percent (n=10) indicated that they had no minor injuries on their nature playground (Figure 9). Similarly 78.3 percent (n=31) had no serious injuries occur on their nature playgrounds (Figure 10).

Figure 9: Number of Minor Injuries that Occurred on Participant’s Schools Playground Facilities during 2015



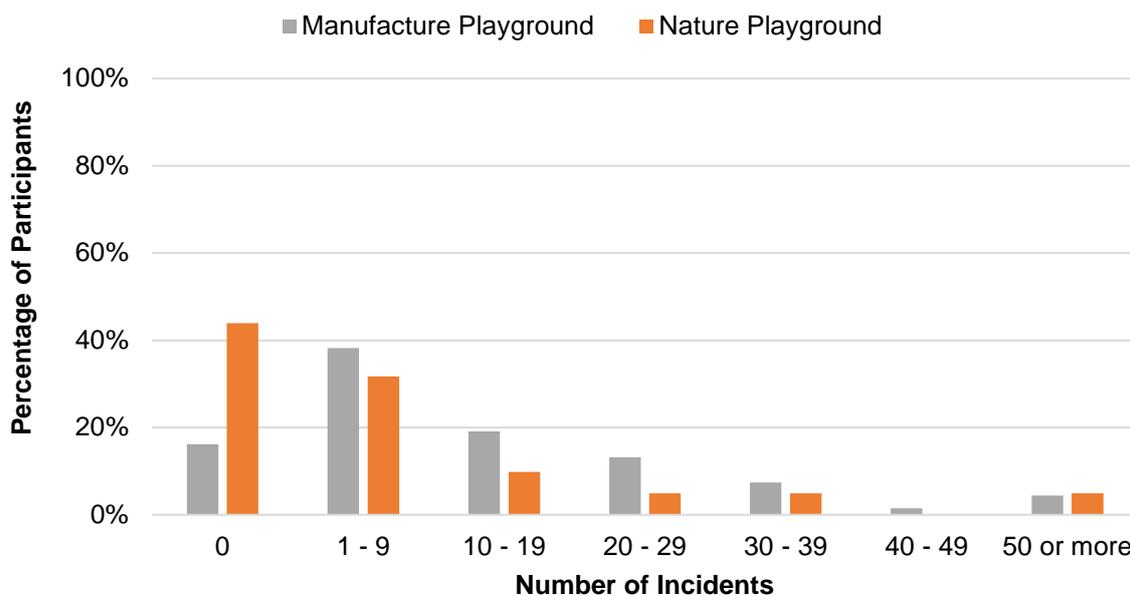
Of incidents that occurred on manufactured playgrounds, the majority of participants (58.1%, n=43) indicated that their school had between 1-9 minor injuries during 2015 (Figure 9), with many recording either no serious injuries (56.9%, n=41) or between 1-9 serious injuries (41.7%, n=30) (Figure 10).

Figure 10: Number of Serious Injuries that Occurred on Participant’s Schools Playground Facilities during 2015



Manufactured playgrounds recorded more incidents of interpersonal conflict or bullying, with 43.9 percent (n=18) of participants recording no incidents on nature playground facilities (Figure 11).

Figure 11: Number of Interpersonal Conflict or Bullying Incidents that Occurred on Participant’s Schools Playground Facilities During 2015



DISCUSSION

Over the past decade nature playgrounds have become increasingly popular in Western Australia, particularly within an early learning and primary school context. Despite the increase in nature playgrounds, there is limited research within Australia investigating the health benefits and safety risks in comparison to manufactured playgrounds.

For children aged between five and twelve, school is one of the main places that they have access to playground facilities. Recess and lunch are the main times children are able to utilise their schools playground facilities, with the majority of schools offering children between 40 and 80 minutes each day to play.

Both manufactured and nature playgrounds are perceived to be safe or moderately safe for children. The potential risks of injury or harm are perceived to be similar for both types of playgrounds with falls and collisions considered to be prominent risks. Cuts and grazes are more of a concern in relation to nature playgrounds and both bullying and unintentional use of equipment are perceived to be a greater risk on manufactured playgrounds.

The benefits of both manufactured and nature playgrounds were recognised with physical activity, motor skill development and balance identified as key benefits for both types of playgrounds. Body and core strength were associated more commonly with manufactured playgrounds, however communication, cooperation, problem solving, creative play, imaginative play and team building were more commonly associated with nature playgrounds. Very few participants saw no benefits associated to playground facilities.

Over three-quarters of schools that participated in the survey recorded incidents that occurred on their playground facilities. Participants were asked to distinguish between minor and serious injuries.

Overall schools had very few serious injuries that occurred on their playgrounds with most school recording either zero or between 1-9 serious injuries during 2015. Minor injuries were more frequent with some schools recording 50 or more minor injuries. Of schools that had nature playground facilities, almost a quarter recorded zero minor injuries and nearly three-quarters recorded zero serious injuries.

Close to half of schools with nature playground facilities had zero interpersonal conflict or bullying incidents with a further 32 percent recording between 1 and 9. In comparison 16 percent of schools with manufactured playground facilities recorded zero interpersonal conflict or bullying incidents and 38 percent recorded between 1 and 9.

It is important to find a balance between risks within playgrounds and the benefit they have towards childhood development. To achieve this playgrounds should be designed and installed to minimise hazards, with regular maintenance to ensure their continued safety. In Western Australia there is no regulatory requirement to comply with Australian Standards relating to playgrounds, however these are widely regarded as the minimum standard.



Recommendations

Based on the findings of the Playground Research Report: A Comparison of the Safety Risks and Health Benefits between Manufactured Playgrounds and Nature Playgrounds within a Schools Environment, the following recommendations have been made to inform the development of the Kidsafe WA Playground Advisory Service:

- Continue to provide a range of services through Kidsafe WA's Playground Advisory Service to assist in creating and maintaining play spaces that support childhood development, health and wellbeing while reducing the risk of serious injury.
- Continue to promote both manufactured and nature playgrounds as a beneficial means of childhood physical activity.
- Encourage schools to install and maintain safe playground facilities and environments for children.
- Promote the Australian Standards relating to playgrounds as a minimum required standard.
- Provide consistent advice to all schools in regards to playground safety.
- Provide professional development sessions for staff maintaining playgrounds and for staff designing playgrounds.
- Encourage schools to develop or review injury prevention policies and procedures in relation to their playground facilities.

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