

process, we re-learned the importance of injury data analysis to understand how a consumer product is used in our daily lives with children. Members of the committee, including product design professionals did not know how a child is caught in a baby chair. It is very important to remember that not only professionals' opinions and discussions but also injury data should be fully utilised to establish safety quality requirements for consumer products.

813 DEVELOPMENT OF NOVEL TOOTHBRUSH TO PREVENT A PENETRATING INJURY OF CHILDREN

^{1,2}Yoshifumi Nishida, ^{1,2}Koji Kitamura, ^{1,2}Mikiko Oono, ¹Tachio Takano, ^{1,2,3}Tatsuhiko Yamanaka. ¹National Institute of Advanced Industrial Science and Technology, Japan; ²Safe Kids Japan, Japan; ³Ryokuen Children's Clinic, Japan

10.1136/injuryprev-2016-042156.813

Background Brushing teeth is an important hygiene practice in our lives. However, this practice sometimes causes a serious injury for children. According to a report from Tokyo Fire Department, Japan, 45 children under 5 on average admitted an emergency room by ambulance annually because of a penetrating injury by a toothbrush. A half of the cases occurred in 1 year old, and 75% of all cases occurred either in 1 or 2 years old. It is necessary to design a new innovative product which promotes children's self-reliance and prevent injury. The purpose of this study was to measure a force inside a mouth when a child brushes his or her teeth and fell down and to design a new product which can prevent a serious oral injury caused by fall.

Methods We developed a device to measure the force when a child falls while brushing teeth. A 2.65 kg weight which was the average weight of a child head was attached to a tip of toothbrush and let it fall from a height of 50 cm. We put a piece of chicken meat under the toothbrush and then observed what happened to the meat. We used the chicken meat assuming inside of a mouth.

Results When the toothbrush with 2.65 kg weight was dropped, the maximum pressure in the toothbrush was about 15.6 MPa. Previous research clarified that the breaking stress of human skin is 3 to 15 MPa, and so this pressure is large enough to penetrate human skin.

Conclusions Based on our previous study, the time to fall is in only 0.5 second. A serious injury occurred in such short period of time. We collaborated with a corporate company dedicated to a safe toothbrush production and designed a "bendable" toothbrush. This toothbrush can bend when the pressure of 1.3[MPa] at a maximum is applied to the brush while maintaining the capability of brushing. The pressure is smaller than the breaking stress of human skin. The new toothbrush allows us to prevent serious injury. This flexible toothbrush is commercialised in Japan since May, 2015.

814 INJURY SEVERITY IN DIFFERENT TYPES OF PRODUCT INVOLVEMENT BASED ON INJURY SURVEILLANCE DATA ANALYSIS

^{1,2}Jesani Catchpoole, ¹Kirsten Vallmuur, ¹Sue Walker. ¹Queensland University of Technology, ²Queensland Injury Surveillance Unit

10.1136/injuryprev-2016-042156.814

Background Severity of injury, as a measure of hazardous product consequences, is an essential aspect in the product safety risk

assessment process. Moreover, the extent of product involvement in an injury event is also fundamental in order to determine the causality and preventability of the injury. While injury severity can be examined using coded injury data, product involvement is often omitted as coded data are limited to inform the level of product involvement in an injury event. However, text narratives data collected in emergency departments can potentially provide relevant product information. The study aimed to examine the severity of injuries and extent of product involvement in paediatric injuries in emergency department (ED) based injury surveillance data.

Methods A total of 7,743 paediatric injury cases were randomly selected from the Queensland Injury Surveillance Unit database and were manually reviewed and categorised according to the level of product involvement using the Product Involvement Factor classification system. Injury severity in these categories was then examined based on triage category and admission rate.

Results Overall, 44% of all reviewed cases were associated with at least one type of consumer product. Based on the triage scoring, product-related injuries had a lower proportion of high severity injuries compared to non-product injuries. Within the product-related groups, injuries associated with high intrinsic risk products had the highest proportion of high severity injuries based on triage scoring (8%) and injuries associated with maladapted or misused products had the highest admission rate after the emergency treatment (20%).

Conclusions The urgency of injuries and the need for further treatment as severity measures vary depending on the level of product involvement. This highlights the need to account for product involvement and injury severity in order to inform a better understanding of product-related injuries in product safety prioritizations. Hence, emergency department data should be utilised to support product safety initiatives.

815 INJURIES RELATED TO PRODUCT MISIDENTIFICATION ERROR: A SECONDARY ANALYSIS OF QUEENSLAND INJURY SURVEILLANCE DATA

^{1,2}Jesani Catchpoole, ¹Ruth Barker. ¹Queensland Injury Surveillance Unit; ²Queensland University of Technology, Centre for Accident Research and Road Safety – Queensland

10.1136/injuryprev-2016-042156.815

Background There are growing safety concerns around consumer product misidentification errors. As incidents are thought to be under-reported to the product safety authority, it is difficult to quantify the extent of the issue. Injury surveillance data can be utilised to identify such injuries, using a combination of narrative text and coded data analysis. This study aimed to identify product misidentification incidents that resulted in injuries and to retrieve any details relating to the injury circumstances using the text narrative.

Methods A secondary data analysis was conducted using Queensland Injury Surveillance data collected over 15 year period (1999–2013). Product misidentification injuries were identified through text search using relevant keywords. The text narrative of all cases identified were then manually reviewed to validate and categorise the product misidentification error by the type of product, whether or not the product had been decanted, and whether it was a dosing error.

Results Overall, 158 cases were validated as relating to product misidentification. Around 61% of these cases were related to primary misidentification due to resemblance between two different