Consumer Usage and Safety Consciousness of Chemical Household Products: Focusing on Wet Wipes for Infants

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Extended Abstract

Consumers use a large number of chemical products to promote hygienic living conditions. Household products containing chemicals are generally used in everyday life, even for infants. Sometimes, the chemical substances may have potential risks. In recent years, consumer safety issues related to these products have been raised when some chemicals turned out to be harmful to humans. For example, some of the chemical ingredients in the antibacterial humidifier disinfectant used in South Korea were proven to be noxious when inhaled. The Korea Center for Disease Control and Prevention (KCDC) announced that there are 357 cases of suspected damage, including 10 confirmed deaths (Korea Center for Disease Control and Prevention, 2013). Even so, the ingredients are still being used with no restrictions in other consumer products including wet wipes, deodorizing products, and detergents. This is more serious in the respect that some of these products are used for infants, especially wet wipes. This study focused on the consumer safety of wet wipes for infants. Since wet wipes are generally frequently used for infants, it is especially important to manage product safety.

As can be seen in the example of antibacterial humidifier disinfectant, there are potential risks to using chemical products that consumers cannot recognize. Consumers can avoid these risks by using information for their safety such as warning labels, product pamphlets, and online websites. These sources, however, are not enough to eliminate potential risks. Consumers should also control their exposure levels by choosing which products to buy, and how they are used (Riley, Fischhoff, Small, & Fischbeck, 2001). If the safety of chemical substances is not secured, it is more reasonable to reduce the possibility of exposure.

In addition to the efforts of consumers, chemical product safety management is carried out by governments. This is based on the analysis of consumer damage resulting from exposure to the products. Health problems resulting from exposure to chemical agents, such as allergies and asthma, have been reported throughout the world (Wolkoff et al., 1998). Analysis includes not only chemical experiments but also research on consumer use patterns. In this study, the consumer use pattern of wet wipes for infants was investigated. Examination of consumer safety consciousness of the products being used is also necessary to understand consumers' psychological burden and use strategy, to ensure safety.

This study investigated consumers' product usage of wet wipes on infants, and assessed their safety consciousness. The safety of wet wipes is controversial, in the respect that they are the most commonly and frequently used product for infants. The purpose of this study was to propose a baseline for the effective safety management of wet wipe use on infants by providing information on consumer use patterns, safety consciousness, and safety behavior.

Data and Methods

Data were collected in August 2013 by an online panel survey company, Macromill Embrain. Female participants who use wet wipes on their children under 36 months of age were recruited. Three hundred females were recruited in total by quota sampling, with three sub-groups: mothers of 0-12 month, 13-24 month, and 25-36 month-old children. The sample included 283 respondents using "baby wipes," 64 respondents using "wet wipes for general purposes," and 47 respondents using both.

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The measurements were obtained from four parts of the survey: consumer safety consciousness of using chemical household products, wet wipe use patterns, consumer safety behavior, and participants' general characteristics.

Likert scales were used for subjective evaluation of the safety of wet wipes, including assessment of the general safety of the product, safety secured by companies, and safety management by the government. The second part of the survey assessed the purpose of use, frequency, and amount of use, to investigate wet wipe use patterns. The third part consisted of six items on a 5-point Likert scale to identify consumers' behavioral strategies for safety in two respects: researching information and precautions of use. The last part of the survey included measures of the general characteristics of the participants including age, employment, education level, the number of children, and age of infant.

Findings and Discussion

Use Pattern and Safety Consciousness

Data were analyzed by ANOVA and General Linear Model (GLM) analysis. First, the number of wet wipes used per day was calculated by multiplying the frequency per day and the number used each time. Findings from ANOVA showed that there were no significant differences within each group regarding the amount of general purpose wet wipes used. In contrast, the usage of baby wipes significantly differed by infant age group ($p = .027$). The mean amount used on 0-12 month-old babies was the highest ($M = 5.03$), while the mean for 25-36 month-old infants was the lowest ($M = 3.51$). The GLM analysis indicated that there was no significant effect on the amount used according to the level of risk recognition. This result indicates that consumers do not change their use patterns, even if they recognize the risks of using wet wipes. This means that using baby wipes is not seen as selective, but rather indispensable to care for babies.

Safety Behavior Strategy

K-means cluster analysis on the consumer behavior strategy items showed that the users of wet wipes were grouped into two different safety behavior strategies: high and low strategy groups. One hundred-fifty three respondents were clustered into the high strategy group. Comparison between the two groups by logistic regression analysis showed that the participant's age and family income had significant effects on the strategy. The odds ratio of the participant's age was .926 ($p < .05$). When age increased by one year, the probability that a person belonged to the high strategy group decreased by 7%. On the other hand, the odds ratio of family income was 1.118 ($p < .01$). Other general characteristics and use patterns, including the number of children, infant age, employment, education level, heavy/light user, and the average amount used were not significant. These results indicate that there is a need for safety education in the older group, and for those with low income.

Effects on Safety Behavior

Safety behavior, especially following the product instructions, was analyzed according to the consumers' subjective safety evaluation and the consumer trust of labelling of the product. Because the risk of using wet wipes would be increased in the case of misuse, it is necessary to examine whether consumers use the product improperly. Whether or not the instructions were followed was surveyed to investigate the actual state of safe use. It was expected that those who believed that wet wipes were safe enough would be less aware of the danger, which may lead to careless use. Consumer trust of the product label was also surveyed, as the instructions are written on the product package or label in general. The GLM analysis indicated that there were no significant differences in the behavior of following the instructions according to the subjective safety evaluation. On the other hand, trust of product labelling was found to have an effect on following the instructions. Participants who believed the product label tended to follow the instructions more, with a mean difference of 0.45 ($t = 4.309$, $p < .001$). In addition, there was a moderating effect. When consumers trusted the safety of the wet wipes, the difference of

direction-following behavior between the two groups increased ($p < .05$). This result indicates that consumers' safety behavior is more influenced by their trust of the label, when they feel safe about the product. Therefore, enhancing consumer trust of the product label is a crucial factor to encourage consumers' safe use of wet wipes.

Safety Behavior and Usage

The usage difference was analyzed according to the consumers' safety evaluation, and consumer trust, of the product label. GLM analysis demonstrated that there was only a marginal interaction effect ($p < .10$). When consumers trusted the safety of wet wipes and the product label, the amount used increased. Although consumers trusted the safety of wet wipes, the amount used increased when they also trusted the label. In fact, product labelling on wet wipes does not provide information about the components or contents, but rather proposes its marketing concept with rhetorical expressions. This confuses consumers when they buy or use wet wipes and refer to the label. Consequently, if consumers believe the label once, they might raise their use of wet wipes without attention. Therefore, for consumer safety, there is a need for an educational effort to enhance consumer use of the product label, but more importantly, to ensure a reliable product label is provided. It is necessary for consumers to use the product label as a useful information source with a critical viewpoint. In addition to consumer efforts, the government should regulate the product label on wet wipes and make an effort to educate those who have problems utilizing the product label.

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