

Examining Cleaning Detergents Handling by Housewives in Wadi Al-Salqah – Gaza Strip

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Abstract

In light of the deteriorating economic situation in the Gaza Strip, women have decided to shift to cheaper items when they buy household cleaning detergents, without taking much care of the chronic effects of these detergents on both health and skin. More specifically, the daily exposure to the chemical detergents puts women at a high risk, which may be doubled when these chemicals are not labeled properly, especially those bought from peddlers. Therefore, the absence of labels, which provide information about the detergents' ingredients and how to handle them, makes the housewives unaware of the proper way to handle these products. To achieve the objectives of the study, 37 women from the east of Deir El-Balah in Wadi El-Salqah area, replied to a questionnaire to examine their handling of the detergents and whether they are aware of the related risks of the exposure to these chemicals. In addition to the questionnaire, the researchers observed 45 women while they were cleaning their houses. The study concluded that housewives in the Wadi El-Salqah area did not handle household detergents in the right way, and consequently, they had put their health at risk. Thus, the study recommends that efforts must be oriented towards disseminating awareness among women about the health risks related to the exposure to the chemical detergents, providing the housewives with manuals of how to use detergents, and what precautions should be taken.

Keywords: Household, cleaning detergents, Gaza, proper handling, chemical exposure.

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1. Introduction:

Traditionally, domestic household work was always related to women in many countries (Bernstein, Brandt, Rezvani, Abbott, & Levin, 2009; Demo & Acock, 1993). Despite the women's revolution against gender inequality in modern societies as they enter the labor market, domestic work is still strongly related to women. In general, women are the dominant homemakers, who decide what to buy regarding cleaning the house (Andra, Charisiadis, Karakitsios, Sarigiannis, & Makris, 2015; Habib, El-Masri, & Heath, 2006). In Palestine, the mainstream culture is that house cleaning is one of the woman's main responsibilities. The society puts more pressure on the woman that she must always have a very well-cleaned house. Thus, the Palestinian women living in the Gaza Strip use a variety of chemical detergents of all kinds, such as dishwashing liquid, bleach, bathtub cleaner, toilet cleaners, all-purpose cleaner and laundry detergents. Due to the deterioration of the economic situation in the Gaza Strip and rising high levels of poverty, many women there have shifted to using detergents sold by local peddlers with no markings or labels on the bottles. All of these factors make women get long term exposure to harmful chemicals. This study aims to assess how women in Wadi Al-Salqah handle these detergents and what they know about their chemical effects on their health. Wadi Al-Salqah town, the population of which is 9000 and situated in the east of Deir El Balah ([Salqah, 2019](#)), was chosen as the sample of this study because it is considered a marginalized area, whose expenditure on food and non-food items falls below the official poverty line, which is 3892; i.e. 43% ([PCBS, 2017](#)). The studies are scanty in this field. Those few studies, which investigated detergents and human behavior, showed a large difference in the methods of utilizing these products and a general lack of protective measures (Bédard et al., 2014; Demo & Acock, 1993). To the best of the researchers' knowledge, this is the first study conducted in the Gaza Strip.

1.1 Terminology

Chemical detergents: Soap and detergents substances, that when dissolved in water possess the ability to remove dirt from surfaces, such as the human skin, textiles and other solids (Ghysels, 2017).

Handling: the manner in which something is treated (Habib et al., 2006)

1.2 Study Problem

Due to the widespread of the unlicensed chemicals, which are sold out at cheap prices at groceries, the high demand for these detergents by Palestinian women living in the Gaza Strip, and the scantiness of studies in this field, the researchers made this study to show how these chemicals are handled and to what extent these detergents will affect the health of women in the Gaza strip.

1.3 Study Objectives

This study aims to assess the handling procedure of the cleaning chemicals used at household level. These sub-objectives can be summed up as follows:

- Identifying the strategies of handling and using the cleaning chemicals by housewives in Wadi Al-Salqah.
- Examining the extent to which the unlicensed cleaning detergents affect the health of women in Wadi Al-Salqah.

1.4 Significance of the Study

There is a high demand on using cheap and low quality cleaning detergents in the Gaza Strip. However, the health effects of these chemicals are still unknown. Therefore, this study is significant for the following reasons:

- The handling of the household cleaning detergents and their effects on health are worth studying, especially in the poor areas in Palestine.
- This study results may contribute to making an official decision by the government towards limiting the usage of unsafe cleaning chemicals.
- The results of this study may be the basis for national awareness of usage and handling of domestic cleaning chemicals.

2. Methodology

In this study, the researchers chose to use the triangulation of the information to make sure there is credibility in delivering the results; 45 questionnaires were distributed and 37 valid questionnaires were received. The sample of women was chosen randomly from the area of Wadi Al-Salqah. Observation of the women while they were cleaning was then conducted. Observation sessions were done at the participants' houses, and the women who were observed were the same 45 women

who had received the questionnaire but only 37 of the observed women answered the questionnaires correctly. Women were first asked if they do not mind being observed while they were cleaning for the purpose of the study; they were cooperative and showed interest in giving the real information. These women were selected from Wadi Al-Salqah in the eastern area of Deir El-Balah, since the majority of the residents' socioeconomic conditions were the same and few supermarkets were available in that area; therefore, women had to rely on buying detergents from peddlers, who came to their homes.

The first stage in the methodology was responding to the questionnaire by the sample of women on how they handle household detergents. For the sake of authenticity, the questionnaires were answered immediately before the researchers. The second stage was the observation process, which lasted between 30 minutes to 1 hour depending on the type of cleaning women were doing. The same forty-five women, who responded to the questionnaire, were observed at this stage. This methodology was adopted from a study by (Habib et al., 2006), who conducted their investigation in Lebanon. The last tool involved conducting interviews with two experts, a doctor in the reception section of Al-Aqsa hospital in Deir El-Balah, and an otolaryngologist. The interviews were recorded, then exported from the recorded tape, and then translated from modern Arabic to English. The researchers used SPSS to analyze the data collected from the questionnaires, as well as valuable notes taken from the experts' interviews.

3. Results and Discussion

The determinants of handling procedures of chemical detergents were formulated from a study done in Lebanon (Habib et al., 2006), and are illustrated in Figure 1 below.



Figure 1: The determinants of handling procedure of chemical detergents

3.1 The Background and Profile of the Participants

The majority of participating women were aged between 21 and 30 years old (38%), followed by 27 % between 31 to 40 and 19 % were from 41 to 50 as shown in (Figure 2).

The income was less than 500 New Israeli Shekels for 46% of the participants, and from 500-1000 New Israeli Shekels for 32% of them as shown in (Figure 3).

Among these women, 43% had a bachelor degree and 35% had completed the secondary level as illustrated in (Figure 4). Almost 46% of them stated that they were the only ones who are in charge of house cleaning, because in Palestine cleaning activities are exclusive to mothers (Sawalha, 2007).

However, 41% stated that they do the house cleaning with some assistance from their daughters or sons and 13% were just participating in cleaning (Figure 5). That means daily cleaning activities take most of the women’s time.

The results show that 86% of the tested women claimed that they were the ones who decide what type of detergent to buy neither their husbands nor any other family member.

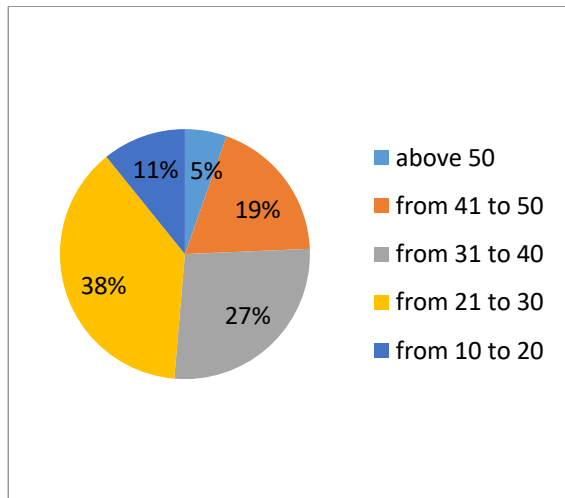


Figure 2: Age of women

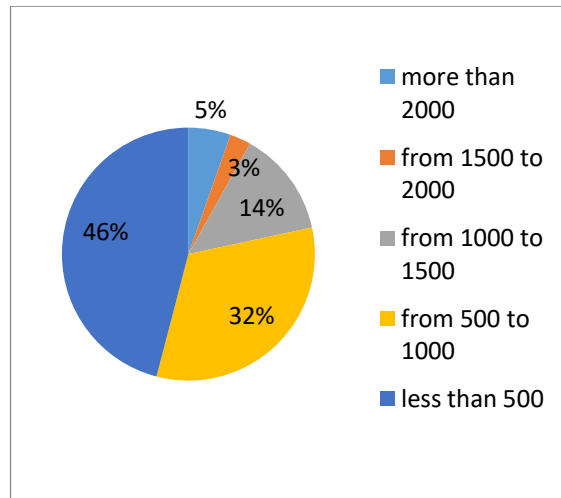


Figure 3: Monthly income in NIS

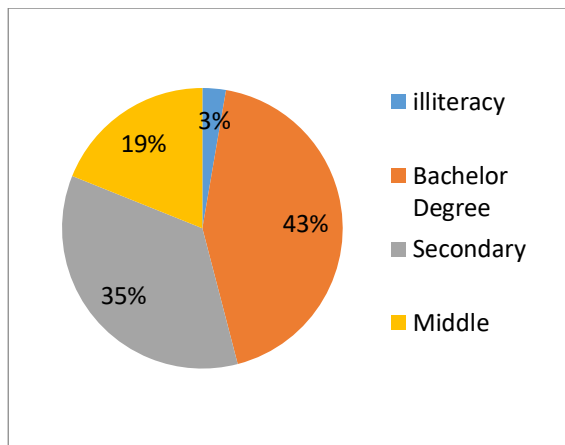


Figure 4: Educational level of women

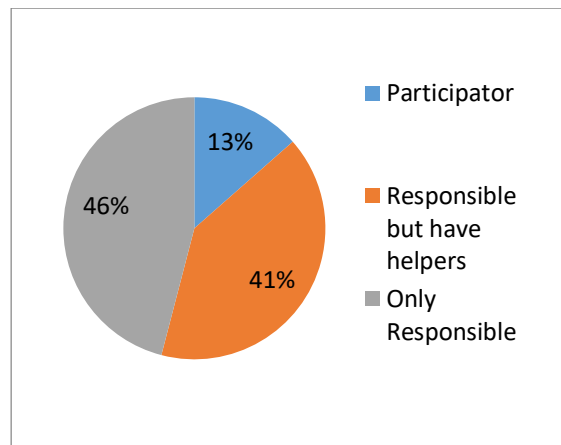


Figure 5: Domestic cleaning role

It is clear that about half of the participants had a very meager monthly income of less than 500 New Israeli Shekels and this may later explain why those women chose to buy detergents from the

peddlers. In addition, the majority of the participants were educated and they could read and understand the instructions and ingredients on the detergents' bottles. However, the unlabeled bottles from peddlers prevent these women from dealing with the potential risks properly.

3.2 Strategies of Detergent Use

The results showed that only 13% of the women bought labeled and marked detergents from the supermarkets, 19% bought unlabeled and unmarked detergents from peddlers, and 68% purchased from both of the two sources as shown in (Figure 6). This means that the percentage of the harmful detergents purchased from the peddlers was higher. This was attributed to the lack of money. As shown in (Figure 7), 46% of the sample has the cost as a priority, and the rest considered quality as the priority.

Studies have showed that the detergents' consumers usually read the instructions labeled on the products, but they tend to ignore putting these instructions into practice (Bearth, Miesler, & Siegrist, 2017). This could be attributed to carelessness, low general risk perception, and intrapersonal factors (Bearth et al., 2017).

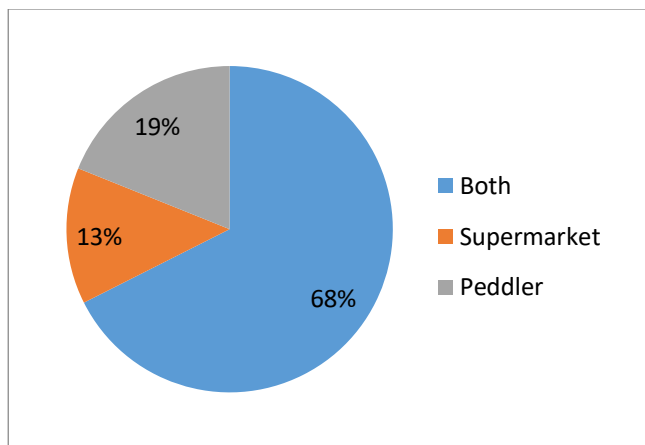


Figure 6: Detergents source

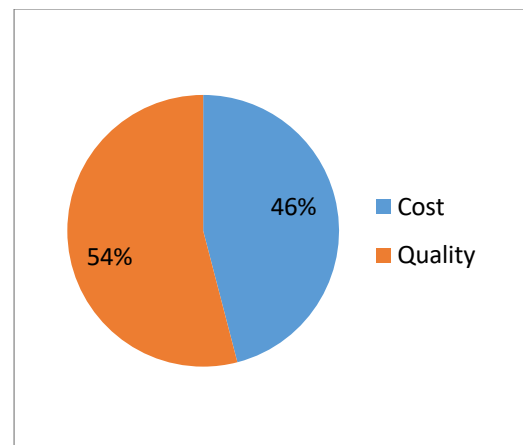


Figure 7: Priority when purchasing

3.3 Types of Detergents

Women in Wadi Al-Salqah used a variety of detergents types, including bleach, dishwashing detergent, and laundry detergents. As a result of the observation process, 16% of the women did not use hydrochloric acid since they believed that it was very harmful. Other women used it for stiff spots, or for toilets only. 14% of women used detergents for other purposes other than its

Original one, and 35% stated that they used it from time to time (Figure 8). During the observation, women used laundry detergents for cleaning the floors. They thought laundry detergents clean well and could replace floor cleaning detergents when necessary.

Experts confirmed that using detergents other than their original purpose can cause harm (Abu-Eriban, 2018; Abu-Rweida, 2019). For example, the continuous use of laundry detergents for cleaning the floor can be in direct touch with the hands causing Eczema (Abu-Eriban, 2018). However, sticking to the original purpose of their use is safer. For example, the majority of the women were observed using automatic washing machines, which do not require direct contact with the detergent with their hands. Therefore, they were able to avoid skin irritation effects.

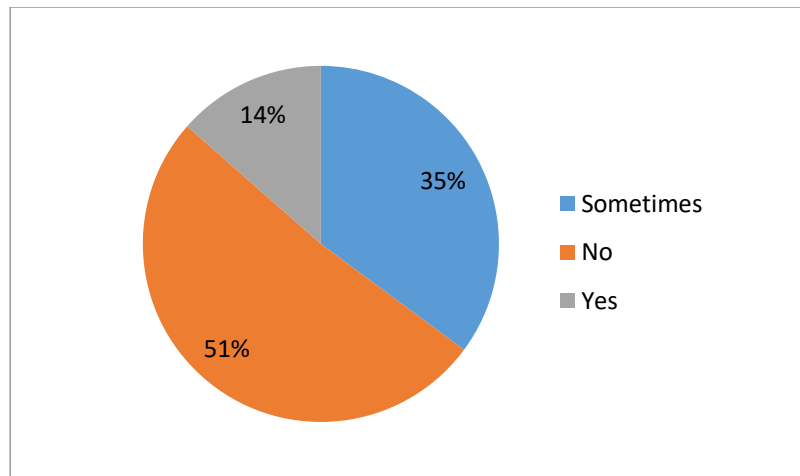


Figure 8: Use of Detergents other than its original purpose

3.4 Frequency and Duration

According to the questionnaire, 49% of women spent less than one hour cleaning, 30% spent from one to two hours and 21% spent more than two hours (Figure 9). However, the results from the observations showed that the housewives spent less cleaning time.

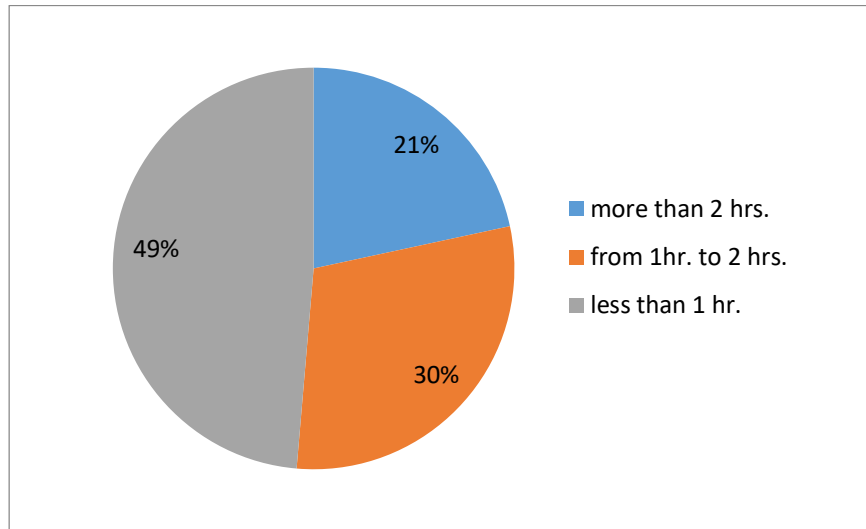


Figure 9: Daily Direct Exposure to Detergents (According to the Questionnaire)

Figure 9 shows that half of the participants spent more than one hour using these detergents. In the long run, this will have negative health effects (Abu-Eriban, 2018).

3.5 Detergent Consumption

The consumption of detergents differs from a woman to another, depending on many factors like having kids, bigger families, and the type of detergent and its purpose. The most commonly used detergent was bleach detergent, which is known as Clorox, which is used for many purposes, especially for higher levels of cleaning. This agrees with a study done in Palestine in 2007 that 96.7 % of the women use chlorine bleach (Sawalha, 2007).

On the other hand, the researchers noticed that women, while cleaning, do not comply with the concentration recommended by the manufacturer; they just poured it, and directly used it. 21% of the observed women said that there was no need to comply with the manufacturer instructions. It was clear that 11% of the observed women used water to balance the detergent according to their belief, without going back to the instructions on the bottle. In addition, 38% of the women who replied to the questionnaire said they used more quantity than recommended by the manufacturer believing that this would clean faster (Figure. 10). This percentage represents about one third of the participants, which may explain the high percentage of skin and respiratory irritation among them (Abu-Eriban, 2018; Abu-Rweida, 2019); further details are shown in (Figure 14).

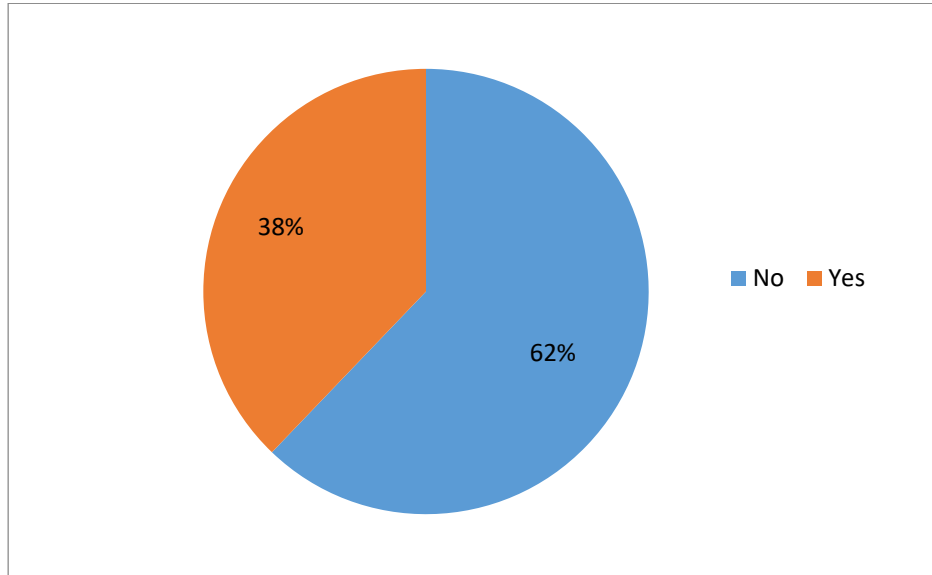


Figure 10: The use of detergents more than recommended

3.6 Storage of Detergents

The participants of the study did not clearly disclose where they stored the detergents and did not admit that those detergents were close to food items. However, the researchers observed that the kitchen, especially under the sink, was the main store for those detergents. The questionnaire results were: 73% of the sample stored the detergents in the bathroom and 24% in the kitchen (Figure 11). These results are in agreement with the study of Sawalha, (2007), where the respondents stored the cleaning products mainly in the bathroom and kitchen closets. In addition, 3% stored the detergents in their original bottles and 67% used both original and unmarked bottles for storing the detergents (Figure 12). However, the researchers believe that the percentage of using unmarked bottles is higher than the respondents' answers according to what they observed.

A study done in Brazil showed that household cleaning products were usually stored within the reach of children under the sinks of kitchens and on floors in backyards, (Presgrave, Camacho, Boas, & Simões, 2008). They also stored chemical detergents in low shelves or transferred them to other containers like soft drink bottles. Such a behavior is critical since those chemicals could be easily accessible to children and could be mistaken with food and drinks (Bearth et al., 2017); this is because only few houses had locked storage space (Sawalha, 2007).

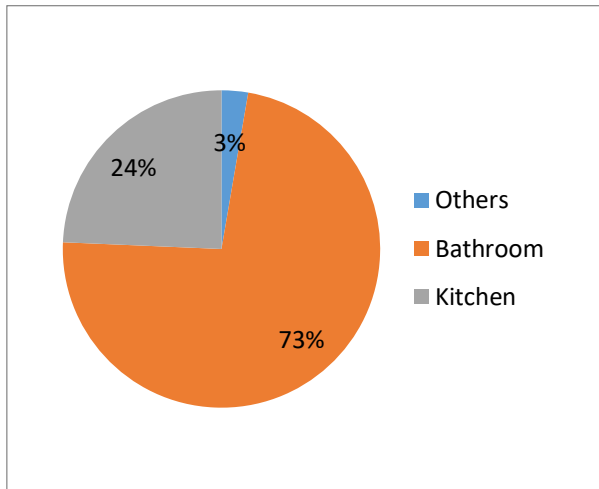


Figure 11: Detergent storage place

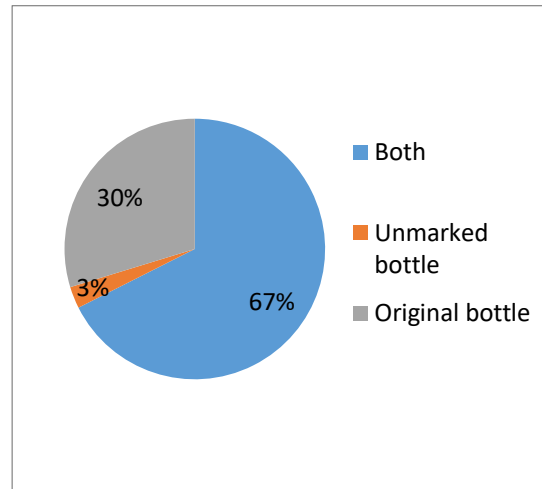


Figure 12: Storage container

3.7 Cleaning Methods

The observed women used to pour the bleach on the bathroom floor and toilet bowl and left it from 10 to 15 minutes and went to do other domestic chores. The smell was so strong since most of them used more than the recommended quantities. After that, they cleaned the toilet and opened the window and door to ventilate the place. That was clearly wrong since ventilation must be while cleaning and not only after cleaning is over. This justifies the high percentage of women who had health issues from chemical detergents as 59% of women stated that they had health effects while cleaning (Figure 13), and the top two health effects were skin and respiratory irritation (Sawalha, 2007). The Eczema comes in third place (Figure14). About 97% of women said they ventilated the place after cleaning and this was literally only after cleaning (Figure 15).

The household cleaning substances are reported to constitute nearly 10% of the poisonings (Arıcı et al., 2012). However, few cases come to the hospital suffering from respiratory irritation as a result of chemical detergents since not all cases require hospitalization (Hughson & Aitken, 2004), and this was confirmed by (Abu-Eriban, 2018); however, this depends on the length of exposure and the severity of the case. In general, symptoms are not acute or persist (Hughson & Aitken, 2004). Reports indicate that chlorine bleach used for cleaning is toxic to the lungs and may cause death; symptoms may be chronic, like causing asthma and bronchitis in the long term exposure among women (Nickmilder, Carbonnelle, & Bernard, 2007).

In addition, bleach is accounted for 37.1% of household cleaning product-related injuries (McKenzie, Ahir, Stolz, & Nelson, 2010), and may cause mucosal erosions, ear, nose and throat lesions and is associated with asthma symptoms (Sawalha, 2007).

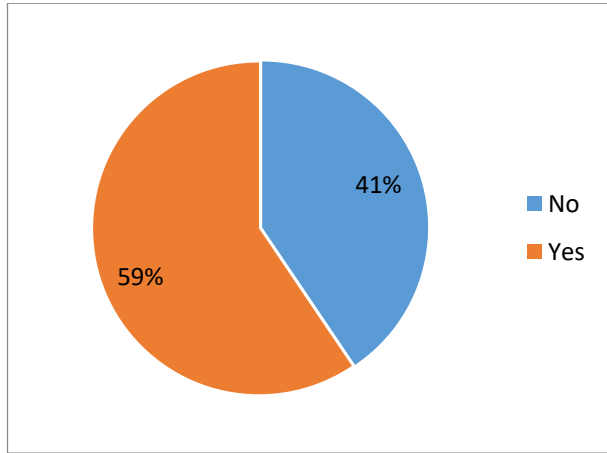


Figure 13: Women experienced health problems

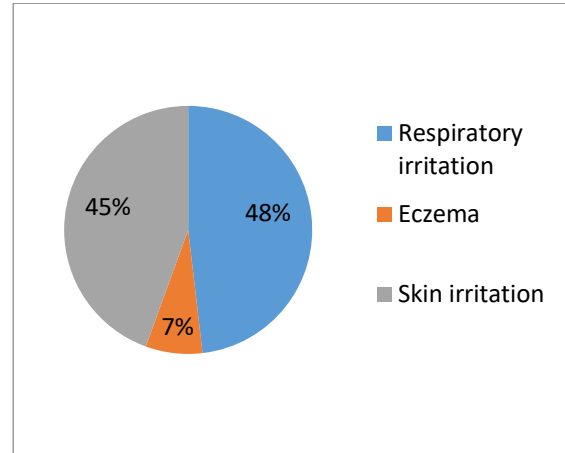


Figure 14: Health problems' types

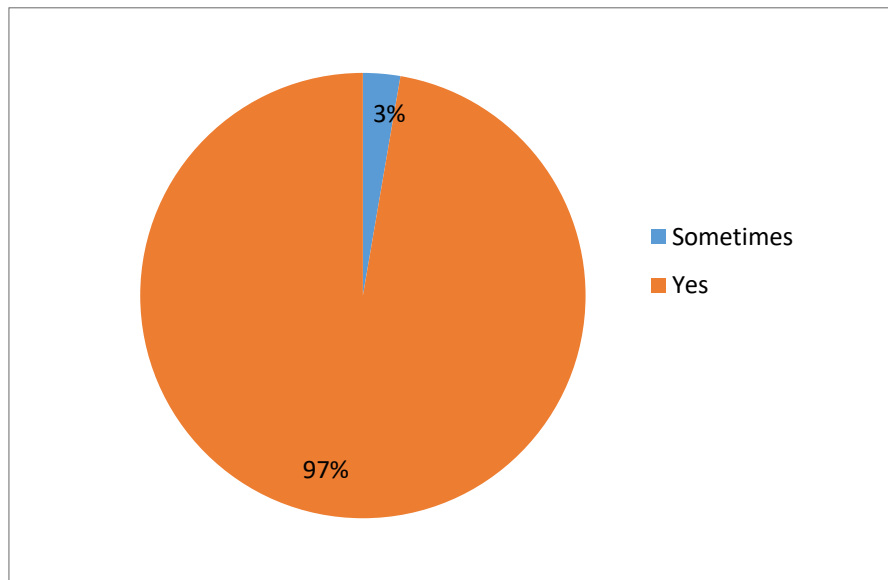


Figure 15: Percentage of women ventilating after cleaning

Health effects must be a concern and a warning for women to take protective measurements while cleaning, especially if young children are in the house (S. Andra, 2014).

There is a strong epidemiological evidence for an adverse effect of exposure to cleaning products and disinfectants on respiratory health (Dumas & Le Moual, 2020). Previous studies have showed an increased risk of asthma among cleaners (Liu et al., 2016), especially detergents in the form of sprays (Bédard et al., 2014; Zock et al., 2007), where women who are in charge of cleaning their homes exhibited increased upper and lower respiratory tract symptoms in response to cleaning agents (Bernstein et al., 2009). In addition, respiratory irritation cases in the Gaza Strip, as a result of using unlicensed detergents, were few but significant, which is an alert of its high risks on human health (Abu-Rweida, 2019).

Women living in extended families have longer domestic cleaning routine. This justifies why some women spend more hours in cleaning the house.

3.8 Mixing Detergents

It was found that 46% of women mixed detergents (Figure 16); they believe that this is going to double the effect. Clorox was the main ingredient among the observed women; they mixed it with most of the household detergents seeking better cleanliness. On the other hand, results from (Sawalha, 2007) showed that only 22% of the women were reported to mix detergents.

However, 54% of women who replied to the questionnaire said that there is no need to mix it since every detergent has its own good effect.

Mixing detergents was the main cause of respiratory irritations among cases that needed hospitalization (Abu-Eriban, 2018; Abu-Rweida, 2019).

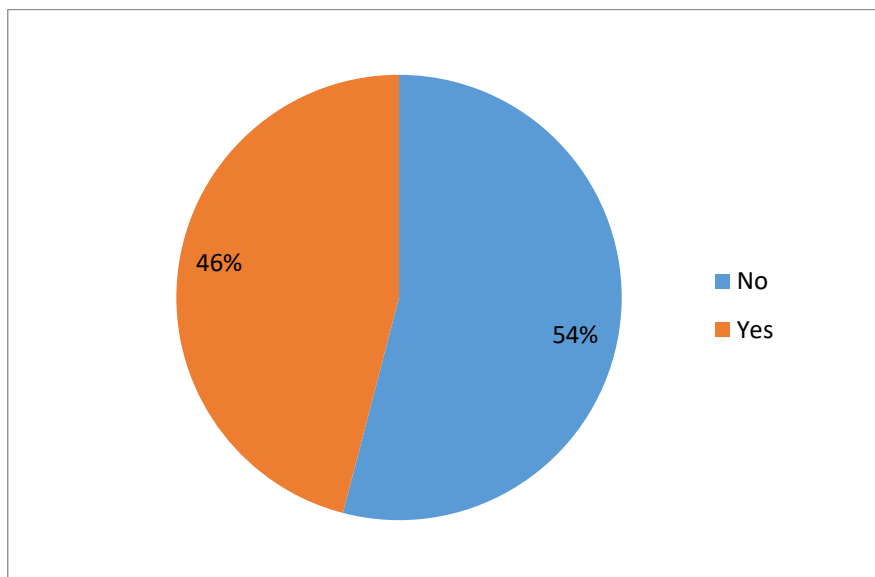


Figure 16: Percentage of women who mix detergents

3.9 Alternative Methods

Lemon for fishy smells, salt, vinegar, boiling water, toothpaste, and ink were all observed to be alternative cleaning methods used by the women in Wadi Al-Salqah. Women also took advice from their mothers and mothers-in-law about using these natural tools for cleaning since they are cheaper and always available in any house and have no health effects.

However, vinegar was found to be the most effective microbial reduction in addition to the commercial cleaners; this includes cleaning activities in the bathroom and the kitchen (Olson, Vesley, Bode, Dubbel, & Bauer, 1994).

3.10 Psychosocial Factors

It was found that 16 % of women were cleanliness obsessed and 57% sometimes felt obsessed about cleaning the house (Figure 17). The most common reasons of obsession were (Figure 18):

- Fear of gossip.
- Having kids.
- Living with extended family.
- Personal preferences

Women believe that the clean house with strong odor of detergents means they are socially accepted by the society norms, and that they are good at housekeeping.

This was noticed during the observation sessions, where women, especially those who live with extended families, said that they like the strong smell of the detergents, which makes them feel their achievement of cleanliness.

Results from this section show that women's obsession in cleanliness makes them in greater exposure to the chemical cleaning products; cleanliness and hygiene have strong cultural values to women who prioritized those values over excessive exposure to chemicals (Abdelgalil, 2016). This agrees with (Garcia-Hidalgo, von Goetz, Siegrist, & Hungerbühler, 2017) study, which showed that cultural settings, as well the climate-geographical setting, might influence cleaning and grooming behavior.

In addition, another study has showed that this cleaning obsession can be a result of racial disparities and put a pressure on women to convince others that they are clean. It has also showed that that African Americans have higher concerns relating to cleanliness compared to European Americans and that they invest more effort into cleaning, grooming, and personal hygiene, despite large differences in mean incomes (Litman, Williams, Rosen, Weinberger-Litman, & Robinson, 2018).

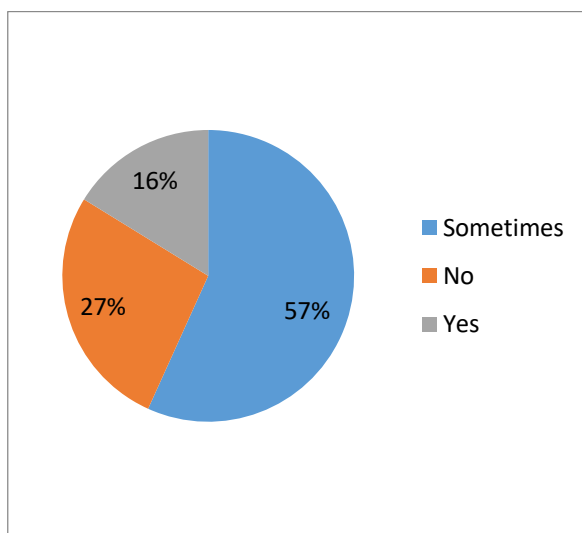


Figure 17: Cleanliness obsession

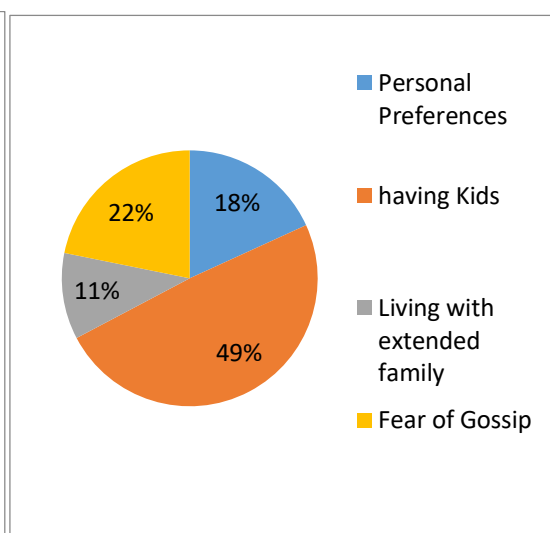


Figure 18: Obsession reasons

3.11 Sharing Domestic Chores

Figure 19 shows the percentage of women who received help with their daily routine cleaning activities. 38% of the sample sometimes received help depending on the reasons a woman needs that help, whether she is sick or has a newborn baby or she went outside. Other families have daughters who provided daily assistance like dishwashing. However, the husband did not share those chores.

Sharing domestic chores by the young daughters put the daughters at the risk of high exposure to chemicals, which may affect their health; this agrees with the study done in Egypt, which investigated the contribution of the children to domestic chores using cleaning products and exposing themselves to chemicals (Abdelgalil, 2016).

On the other hand, during the observation sessions, it was noticed that no one shared the domestic chores with the observed woman. This could be explained by referring to the factor privacy of the families in Wadi al Slaqah village, and that women there did not want to show the researchers that they needed help and that they could clean perfectly on their own, which is a kind of cultural norms. This was not the same when they answered the questionnaires, where 30% of the women said that they share domestic chores with their family members, and 38% said that they sometimes get help while cleaning from their family members.

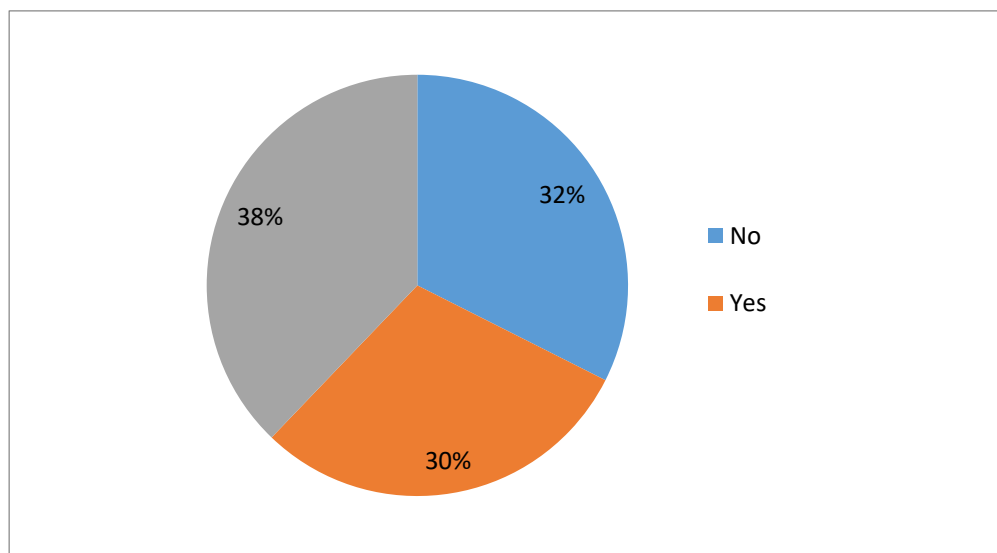


Figure 19: Percentage of sharing domestic chores with family members

3.12 Protective Measures

During the observation sessions, the authors noticed that some women get in direct touch with the chemical detergents, either by hand or foot. Figure (20) shows the percentage of gloves use among women, 38% of the sample did not use them for these reasons:

- They do not care; they find them useless.
- They do not feel comfortable using them.
- Gloves make things slip from their hands.

Generally most people avoided using gloves, presumably because they impeded the cleaning process and they make it more difficult to grab objects (Garcia-Hidalgo et al., 2017).

The good news in this study is that 70% of women do read the markings before using the detergents, which is understandable in the native language (Sawalha, 2007), others who said no, stated that the reason was that they bought those detergents from the peddlers, who sell unmarked bottles (Figure 21).

Women are encouraged to avoid direct contact with the chemical detergents, including not bending too much and not using detergents more than recommended by the manufacturer (Hughson & Aitken, 2004).

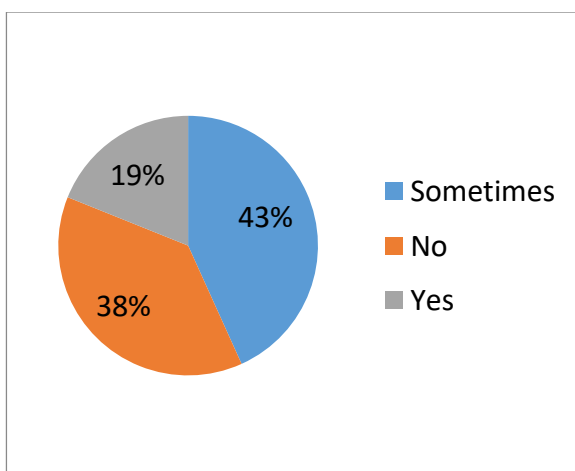


Figure 20: Percentage of gloves usage

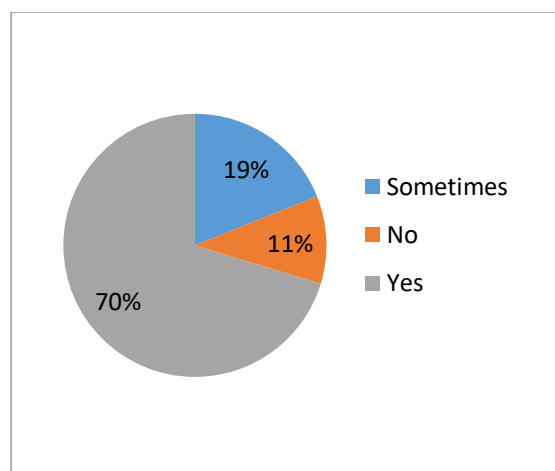


Figure 21: Reading the bottle marking

Conclusion

This study was designed to investigate the handling procedures of chemical detergents by the housewives in Wadi Al-Salqah - Gaza Strip. The study showed that the majority of the tested housewives were not seriously aware of the health effects resulted or might result from wrong handling, since the protective measures were not taken into account as an important issue. The financial situation and the low monthly income were the main reasons, which compelled women to choose shopping from the peddler those detergents, which are of poor quality and with no safe markings. The culture puts more pressure on women as they believe strong odors are signs of clean house, which explains the high consumption of detergents.

Recommendations and future studies

The researchers recommend that the government should prevent peddlers from trading in unlicensed detergents as well as conducting awareness-raising measures for housewives for the proper selection of the detergents. They also recommend that efforts must be oriented towards raising awareness among women about the health risks related to the exposure to chemical detergents, the proper procedures of handling them, and the right way to take necessary safety preventive measures. The researchers also recommend the necessity of conducting more comprehensive studies that include children, adults, and men who often assist in the cleaning work as well as conducting comparative studies with other areas in Palestine.

Researchers' Note

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فحص ربّات البيوت في وادي السلقة لطريقة استخدام مواد التنظيف- قطاع غزة

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الملخص:

في ضوء الوضع الاقتصادي المتدهور في قطاع غزة، اختارت النساء التحول إلى أغراض أرخص ثمنًا في أثناء التسوق لمواد التنظيف المنزلية، متجاهلات آثارها المزمّنة على الصحة والجلد. إن التعرض اليومي للمنظفات الكيميائية يعرض النساء لخطر كبير، ويكون الخطر أعلى عندما لا يكون لهذه المواد الكيميائية علامات مناسبة، وأحيانًا تكون الزجاجات الأولية، خاصة تلك التي يتم شراؤها من بائع متجول، لا تحمل ماهية المكونات أو أية إرشادات، ما يجعل هؤلاء النساء لا يعرفن الطريقة الصحيحة للتعامل مع هذه المنتجات. في شرق دير البلح في منطقة وادي السلقة، أجابت 37 امرأة عن استبيان يشمل أسئلة التعامل السليم وفحص فهمهن للمخاطر المرتبطة بالتعرض للمواد الكيميائية في أثناء استخدام المنظفات المنزلية. إلى جانب الاستبيان، استخدم المؤلفون الملاحظة أداة إضافية في المنهجية لتوفير المزيد من الدقة للنتائج باستخدام تقنية التثليث، وكذلك المدخلات من خبيرين. وخلصت الدراسة إلى أن ربّات البيوت في منطقة وادي السلقة لا يتعاملن مع المنظفات المنزلية بالطريقة السليمة، ما يعرض صحتهن للخطر. وتوصي الدراسة بأنه يجب توجيه الجهود نحو توعية النساء بالآثار الصحية المتعلقة بتعرضهن للمنظفات الكيميائية، وكذلك الإجراءات المناسبة للتعامل معها، وأيضًا الطريقة الصحيحة لاستخدام معدات الحماية وأهميتها العالية.

الكلمات المفتاحية: منزلي، مواد التنظيف، غزة، الاستخدام المناسب، التعرض الكيميائي.