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Family Awareness Towards Medication Safety In Sabya General Hospital, Jazan, Saudi Arabia

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Abstract

Background: Accidental or unintentional poisoning in young children (under the age of 5 years) is a common health related problem all over the world. The data resources by the World Health Organization stated unintentional poisoning is the third leading cause of death caused by unintentional injuries. Thus, this study aimed to assess how the hospital outpatient visitors deal with home medication in Jazan region, Saudi Arabia and to explore the relationship between how they deal with the home medications and gender.

Methods: A cross sectional study was conducted in Jazan. The study was conducted using an online self-administered questionnaire via Google Form.

Results: About 404 participants were enrolled in the current study. Almost 203 (50.2%) were males. Most of them were in the age group of 26-35 years (35.9%), were bachelor's degree holders (50.5%) and married (76%). Around 365 (90.3%) participants kept medicines at any location inside their home. Of them, 149 (36.9%) kept medicines in the cabinet or safe locker. Majority (70.3%) of

the participants ensured that medicines were placed out of the reach of children. The most common types of medicines stored at home were analgesics (70%) followed by cough cold and congestion medicines (55.9%). The height at which medicines were stored was equal to the adult height as stated by 236 (58.4%) participants. About 58 (14.4%) participants had previously witnessed incidents where children accidentally put medicines in their mouths. Only 63 (15.6%) participants had previously attended awareness session about the safe storage of medicines at home, while 295 (73%) participants were willing to attend a training session about the safe storage of medicines at home. Further, females tended to ensure that medicines were placed out of the reach of children more than males (P value = 0.026).

Conclusion: Good level of knowledge and awareness about safe storage of medicines at home was found. The most frequently reported storage sites for medicines were found to be fridge and bedrooms. Few knowledge gaps were noted regarding the correct procedures adopted in a confirmed or suspicious case of medicine ingestion by children.

Keywords: Awareness, family, medications safety, Sabya, Jazan

INTRODUCTION:

Accidental poisoning is a type of unintentional injury in children under five years of age that frequently occur at home. According to the data published by the World Health Organization (WHO), accidental poisoning is the third leading cause of death associated with unintentional injuries. The poisoning incidents that do not cause death are also reported with greater frequency and might result in emergency admissions and disabilities that might last for all the life of the affected child [1, 2].

The incidents of accidental poisoning are avoidable and thus these types of injuries are considered as preventable injuries. As per data sources of the WHO, seven out of ten deaths due to accidental poisoning in European children can be stopped if sufficient measures are taken [3]. For prevention of these accidents, four main strategies were found to be very effective. Firstly, toxic agents should not be kept at homes and should be removed from areas that are accessible to children. Secondly, the packaging of toxic substances and medicines should be designed in a way that a

child cannot open it. There should be laws for enforcement regarding these practices by the manufacturers and pharmaceutical industries. Thirdly, the medicines should be provided in a non-lethal composition by the manufacturers and the drugs should be packaged in quantities that should not be lethal if ingested by a child. Lastly, there should be sufficient establishment of poison control centers equipped with infrastructures capable of urgently addressing the poisoning accidents [1–3].

Children, especially those under the age of 5 years, tend to spend most of their time at their home. During their stay at home, careful and vigilant supervision is required. Most of the poisoning accidents in this age group occur at the premises of home. Children might get exposed with cleaning agents or medicines at their home and might ingest it. Hence, there is an increased risk of poisoning accidents if the home cleaning liquids or medicines are not stored properly [1, 4].

The Center for Disease Control and Prevention (CDC) has recommended parents and caregivers of young children to follow some guidelines to protect children from accidental poisoning with medicine ingestion. These guidelines encourage parents to put the medicines out of the reach of children. Medicines should be stored in a place, which is higher than kids' height and should be away from their reach and out of their sight. It is not recommended to leave the medicines on the bedside of an ill child even for a small time duration. Medicines should always be kept away from children's reach after every use. Parents are also advised to always put the safety caps locked on bottles of the medicines, when provided. Parents should also educate their kids about medicines, the purpose of medicines and the reasons why only adults should give them the medicines. It is strongly discouraged for parents to tempt or convince the kids to take medicine by telling that it is a candy or any sweet edible thing. In addition, visitors or relatives in the home should also be guided to always keep their medicines away from the children. Finally, all parents should be aware about the emergency services in their localities that could be availed in case of an accidental ingestion of the medicine [5].

The patterns associated with poisoning with medicines and the related attitudes and practices in a given population vary greatly depending upon the geographical and socio-economic parameters of the population. Hence, the strategies to control these incidents

should also be designed and implemented depending upon the regional factors. For instance, over the counter medicines including Paracetamol and Ibuprofen were reported to be prevalently ingested agents in the cases that occurred in United Kingdom (UK). On the other side, paraffin was a major source of accidental poisoning in the developing nations where it is routinely used in household chores [6]. Epidemiological data regarding the cases of accidental medicine ingestion and unintentional poisoning from different countries might help to formulate the guidelines and implement prevention measures to control the cases of accidental poisoning in young children. Parents should be educated about these measures and sufficient efforts should be made to ensure children's safety [6–8].

Bishop-Freeman, et al., published an overview analysis of childhood fatalities due to accidental poisoning by ingestion of medicines or drugs. The majority of these cases reported the deaths of children within the age group of 8-24 months and the ingested agents were opioids or illicit drugs. It was also highlighted in the study that improving awareness and education about adverse impacts of opioids and illicit drugs in adults could help in reducing the risk of childhood poisoning with these agents at homes [9]. Madden, et al., observed in a prospective cross-sectional study conducted in United States (US) that the majority of parents (90%) stored the opioid medicines in places that might have children's reach [10]. Another prospective cross sectional survey was carried out by Salzman, et al., to assess the modifiable factors and behaviors related to accidental ingestion of medicines by children. The outcomes of study indicated that only 3% of the caregivers locked the medicines in drawers/safe while only 25% stored the medicines in secure places [11]. Also in Canada, Abou-Karam, et al., highlighted in a prospective descriptive study that the prescription of drugs like morphine should also be carefully monitored and limited for in home usage as a lot of these drugs stay unused and might prove to be a risk of unintentional poisoning in young children [12].

Further, Dayasiri, et al., reported the findings of a multicenter descriptive study carried out to analyze the status of childhood poisoning events in Sri Lanka. The results of this study indicated that 67.9% cases occurred inside home premises and the majority (35.6%) of the children were exposed with Paracetamol [13].

Syofyan, et al., presented the findings of a cross-sectional study designed to assess the attitudes and knowledge of grade 5 students enrolled in an Indonesian school about medicine use, purpose of medicines, benefits of medicines and dangers or risks. The authors believed that students should be provided with educational resources to improve their understanding about medicine related risks and hazards [14].

Moreover, Daifallah, et al., carried out a cross-sectional study to assess the awareness level of Palestinian parents about toxicity and dosage of Paracetamol in children. It was revealed that majority (95.5%) of the participants had insufficient knowledge and scored less than 80% [15]. Sharif, et al., presented the findings of a study carried out in the United Arab Emirates (UAE) to analyze the attitudes, practices and behaviors of parents and caregivers regarding storage of medicines in the home. It was noted that 40% of the household units stored 16-20 drugs inside homes and 56% participants mentioned that they store the medicines either in the kitchen or in bedrooms [16]. In Qatar, Hendaus, et al., carried out a cross sectional study to assess the knowledge and attitudes of parents about medication storage and disposal. It was identified that 95% parents dispose of the expired drug where 66% of participants throw medicines in the trash cans without removing packaging/bottles while only 14% remove the packaging before dumping medicines in the trash [17]. In another study Hendaus, et al., analyzed the practices among Qatari parents about medication storage. It was noted that 90% of the study participants (N=305) stored medications inside the home premises and the location of storage was in reach of children [18].

In Saudi Arabia, a survey based cross sectional study was conducted by Alhaboob A. (2021) to analyze the risk factors associated with childhood poisoning. The incidence of childhood poisoning was found to be quite common as more than 80% participants mentioned previous childhood poisoning events in the family where they had to take the child to emergency care. Also, 47.7% cases were reported to occur due to ingestion of drugs by children [19]. Similar outcomes were reported by Ibrahim, et al., when they carried out a retrospective descriptive study in Al Jouf region. The study revealed that medicines were the most common (41%) responsible agent of childhood intoxication [20]. These studies and some other studies from Saudi Arabia highlighted the

need for more efforts for improvement in parental awareness about safe ways to store medicines and drugs at home [21, 22]. Thus, this study aimed to assess how the hospital outpatient visitors deals with home medications in Jazan region, Saudi Arabia and also to explore the relationship between how they deal with the home medications and gender.

MATERIALS AND METHODS:

A cross sectional study was carried out in Jazan, Saudi Arabia February till November 2023 after obtaining the respective approval of the study from Research Ethics committee in Ministry of Health in Jazan. The study population was recruited from outpatient visitors who visited the Pharmacy Department at Sabya General Hospital. Any adult outpatient clinic visitor who came to the Pharmacy Department at Sabya General Hospital –Jazan, who lived in Jazan, agreed to participate in the study, both sex, any nationality, and who could read and had a social media account were included in the study. While, non Sabya General Hospital outpatient clinic visitor, non Jazan resident, individuals who had no social media account, and/or who refused to share in the study were excluded.

The sample size was calculated using EPI info program. Based on 95% confidence interval, 5% margin of error and total population of Jazan, Saudi Arabia. The estimated sample size was 384 and was adjusted to 422 to compensate for 10% non-response rate.

The study was conducted through a convenient non-probability sampling technique via Barcode using an online validated self-administered questionnaire based on previous studies [11, 18, 23]. The Barcode was shared with all outpatient clinic visitors. The aim of the study was clearly explained in the interface. The questionnaire contained socio-demographic characteristics of the participants like age group, sex, nationality, and residence. The questionnaire also included questions about how families dealt with home medications in Jazan, Saudi Arabia. The questionnaire was pretested in a pilot study over a sample of 20 participants whose results were not included in the study. Some modifications were done accordingly to ensure clarity and easy understanding of the questions.

Data were coded, entered, and analyzed using the Statistical Package for Social Science (SPSS) version 23. Qualitative data were expressed in the form of number and percentage (No. & %). Chi-square (χ^2) test was used to examine qualitative data between two groups.

RESULTS:

A total of 404 participants were included in the current study. Around 203 (50.2%) were males. About 145 (35.9%) were within the age group of 26-35 years old. The vast majority of the participants 390 (96.5%) were of Saudi Arabian nationality. Most of the participants (50.5%) were bachelor's degree holders. In regards to marital status; most of the participants (76%) were married. Concerning number of children; 68 (16.8%) participants had 3 children, while 59 (14.6%) participants had more than 5 children. Most of the participants (57.4%) were employed with average monthly income of less than 3,000 SAR (29.2%) (Table 1).

Table 1: Socio-demographic characteristics of the study participants (n=404)

Variable	Categories	Frequency	Percent
Gender	Male	203	50.2
	Female	201	49.8
Age (in years)	25 or less	65	16.1
	26-35	145	35.9
	36-45	132	32.7
	46-55	49	12.1
	> 55	13	3.2
Nationality	Saudi	390	96.5
	Non-Saudi	14	3.5
Educational level	Illiterate	3	0.7
	Primary	21	5.2
	Intermediate	25	6.2
	Secondary	117	29
	Diploma	27	6.7
	Bachelor's degree	204	50.5
	Postgraduate	7	1.7
Marital status	Single	87	21.5
	Married	307	76
	Divorced	6	1.5

	Widowed	4	1
No. of children	None	110	27.2
	1	41	10.1
	2	63	15.6
	3	68	16.8
	4	37	9.2
	5	26	6.4
	More than 5	59	14.6
Occupation	Student	18	4.5
	Employed	232	57.4
	Unemployed	121	30
	Retired	20	5
	Private business	7	1.7
	Other	6	1.5
Average monthly income (SAR)	Less than 3,000	118	29.2
	3,000-4,999	49	12.1
	5,000-9,999	88	21.8
	10,000-14,999	78	19.3
	More than 15,000	71	17.6

Regarding medicines storage practices and behaviors; about 193 (47.8%) participants had patients affected with chronic disorders at home. Almost 365 (90.3%) participants keep medicines at the premises of home. Where, 165 (40.8%) mentioned keeping the medicine storage place locked every time. Further, 319 (79%) participants ensure to lock safety caps of medicine packaging after use every time. Majority (70.3%) of the participants ensure that medicines are placed out of the reach of children. About 214 (53%) participants ensured that every time medicines are placed where the child cannot see it and 206 (51%) participants were found to be storing medicines in only 1 place. The height at which medicines were stored is equal to the adult height was stated by 236 (58.4%) participants and higher than kids height as reported by 296 (73.3%) participants. About 58 (14.4%) participants have previously witnessed an incident where the child accidentally put medicines in his mouth. Further, 268 (66.3%) have thought about the possibility of children ingesting the medicines stored at home and the potential harms it might cause. Only 63 (15.6%) participants have previously attended awareness session about the safe storage of medicines at home and 295 (73%) were willing to attend

a training session. Additionally, females tend to ensure that medicines are placed out of the reach of children more than males (P value = 0.026) (Table 2).

Table 2: Medicines storage practices and behaviors

Variable	Categories	Overall n (%)	Gender		P value
			Male	Female	
Do you have any patients affected with chronic disorders at home?	Yes	193 (47.8)	97 (47.8)	96 (47.8)	0.689
	No	185 (45.8)	95 (46.8)	90 (44.8)	
	I am not sure	26 (6.4)	11 (5.4)	15 (7.5)	
Do you have to keep medicines at the premises of home?	Yes	365 (90.3)	180 (88.7)	185 (92)	0.100
	No	26 (6.4)	18 (8.9)	8 (4)	
	I am not sure	13 (3.2)	5 (2.5)	8 (4)	
Do you keep the medicine storage place locked?	Every time	165 (40.8)	76 (37.4)	89 (44.3)	0.442
	Most of the times	145 (35.9)	78 (38.4)	67 (33.3)	
	Sometimes	65 (16.1)	31 (15.3)	34 (16.9)	
	Never	23 (5.7)	14 (6.9)	9 (4.5)	
	I am not sure	6 (1.5)	4 (2)	2 (1)	
Do you ensure to lock the safety caps of medicine packaging after use?	Every time	319 (79)	151 (74.4)	168 (83.6)	0.125[F]
	Most of the times	59 (14.6)	37 (18.2)	22 (10.9)	
	Sometimes	19 (4.7)	10 (4.9)	9 (4.5)	
	Never	2 (0.5)	2 (1)	0 (0)	
	I am not sure	5 (1.2)	3 (1.5)	2 (1)	
Do you ensure the medicines are placed out of the reach of children?	Every time	284 (70.3)	132 (65)	152 (75.6)	**0.026[F]***
	Most of the times	90 (22.3)	50 (24.6)	40 (19.9)	
	Sometimes	24 (5.9)	15 (7.4)	9 (4.5)	
	Never	4 (1)	4 (2)	0 (0)	
	I am not sure	2 (0.5)	2 (1)	0 (0)	
Do you ensure that medicines are placed where the child cannot see it?	Every time	214 (53)	103 (50.7)	111 (55.2)	0.372
	Most of the times	113 (28)	56 (27.6)	57 (28.4)	
	Sometimes	55 (13.6)	29 (14.3)	26 (12.9)	
	Never	20 (5)	13 (6.4)	7 (3.5)	
	I am not sure	2 (0.5)	2 (1)	0 (0)	
Do you put the medicines on bedside of the child when the child is sick?	Every time	27 (6.7)	15 (7.4)	12 (6)	0.260
	Most of the times	42 (10.4)	26 (12.8)	16 (8)	

	Sometimes	89 (22)	39 (19.2)	50 (24.9)	
	Never	232 (57.4)	118 (58.1)	114 (56.7)	
	I am not sure	14 (3.5)	5 (2.5)	9 (4.5)	
I store medicines in_____ at my home?	Only one place	206 (51)	102 (50.2)	104 (51.7)	0.810
	Two places	123 (30.4)	61 (30)	62 (30.8)	
	Three places	29 (7.2)	16 (7.9)	13 (6.5)	
	More than three places	32 (7.9)	15 (7.4)	17 (8.5)	
	I am not sure	14 (3.5)	9 (4.4)	5 (2.5)	
The storage place or places for medicines at my home is_____.	Higher than an adult height	70 (17.3)	40 (19.7)	30 (14.9)	0.405
	Equal to an adult height	236 (58.4)	114 (56.2)	122 (60.7)	
	Lower than as adult height	69 (17.1)	37 (18.2)	32 (15.9)	
	I am not sure	29 (7.2)	12 (5.9)	17 (8.5)	
The storage place or places for medicines at my home is_____.	Higher than the kids' height	296 (73.3)	142 (70)	154 (76.6)	0.119
	Equal to the kids' height	64 (15.8)	39 (19.2)	25 (12.4)	
	Lower than the kids' height	25 (6.2)	15 (7.4)	10 (5)	
	I am not sure	19 (4.7)	7 (3.4)	12 (6)	
Have you ever experienced an incident where the child accidentally put medicine in his/her mouth?	Yes	58 (14.4)	23 (11.3)	35 (17.4)	0.133
	No	333 (82.4)	175 (86.2)	158 (78.6)	
	I am not sure	13 (3.2)	5 (2.5)	8 (4)	
Have you ever thought about the possibility of children ingesting the medicines stored at home and the potential harms it may cause?	Yes	268 (66.3)	134 (66)	134 (66.7)	0.750
	No	111 (27.5)	58 (28.6)	53 (26.4)	
	I am not sure	25 (6.2)	11 (5.4)	14 (7)	
Have you previously attended any awareness session about the safe storage of medicines at home?	Yes	63 (15.6)	32 (15.8)	31 (15.4)	0.311
	No	318 (78.7)	163 (80.3)	155 (77.1)	
	I am not sure	23(5.7)	8 (3.9)	15 (7.5)	
Will you be willing to attend a training session	Yes	295 (73)	153 (75.4)	142 (70.6)	0.254
	No	41 (10.1)	22 (10.8)	19 (9.5)	

on this subject, if required?	I am not sure	68 (16.8)	28 (13.8)	40 (19.9)

F: p values calculated using Fisher's exact test while other p values calculated using chi-square test, * significant p value < 0.05.

Concerning the storage places of medicine; most of the participants (36.9%) keep medicines in the cabinet or safe locker. The most commonly reported places for storing medicines were fridge (53%) and bedroom (52.2%). The most common type of medicines stored at home were analgesics, pain and fever relieving medicines (70%) followed by cough cold and congestion medicines (55.9%) (Table 3).

Table 3: storage places of medicines and preferred storage location

Variable	Categories	Overall n (%)
Where do you keep these medicines?	In a bag	57 (14.1)
	In a box	86 (21.3)
	In the drawer	77 (19.1)
	In the cabinet/locker/safe	149 (36.9)
	On the table	56 (13.9)
	Fridge	68 (16.8)
	Other place	7 (1.7)
My commonly preferred storage location for medicines is_____.	Kitchen	73 (18.1)
	Bathroom	2 (0.5)
	Bedroom	211 (52.2)
	Living room	43 (10.6)
	Fridge	214 (53)
	None of them	3 (0.7)
	All of them	1 (0.2)
	Other	9 (2.2)
	I am not sure	1 (0.2)
Common medicines stored in my home are_____.	Diabetic medicines	91 (22.5)
	Hypertension medicines	95 (23.5)
	Analgesic/pain relieving/fever relieving medicines	283 (70)
	Multivitamin/supplements	136 (33.7)
	Anti-allergic medicines	124 (30.7)
	Cough/cold/congestion medicines	226 (55.9)

None of them	12 (3)
All of them	46 (11.4)
Other	6 (1.5)
I am not sure	5 (1.2)

In a situation of medicine ingestion by a child; about 266 (65.8%) participants would rush to emergency department if the case is confirmed and 239 (59.2%) would do the same if the case is a suspicion. Around 171 (42.3%) participants would help the kid to spit it out if it is a confirmed case. About 128 (31.7%) participants would call the local authorities in confirmed cases. Almost 127 (31.4%) participants would put a finger in child's throat to initiate vomiting if it is a confirmed case. And 113 (28%) participants would just observe the kid for any discomfort signs or worsening symptoms if it is suspicious case. About 6 (1.5%) participants mentioned that they would do nothing if it is a confirmed case (Figure 1).

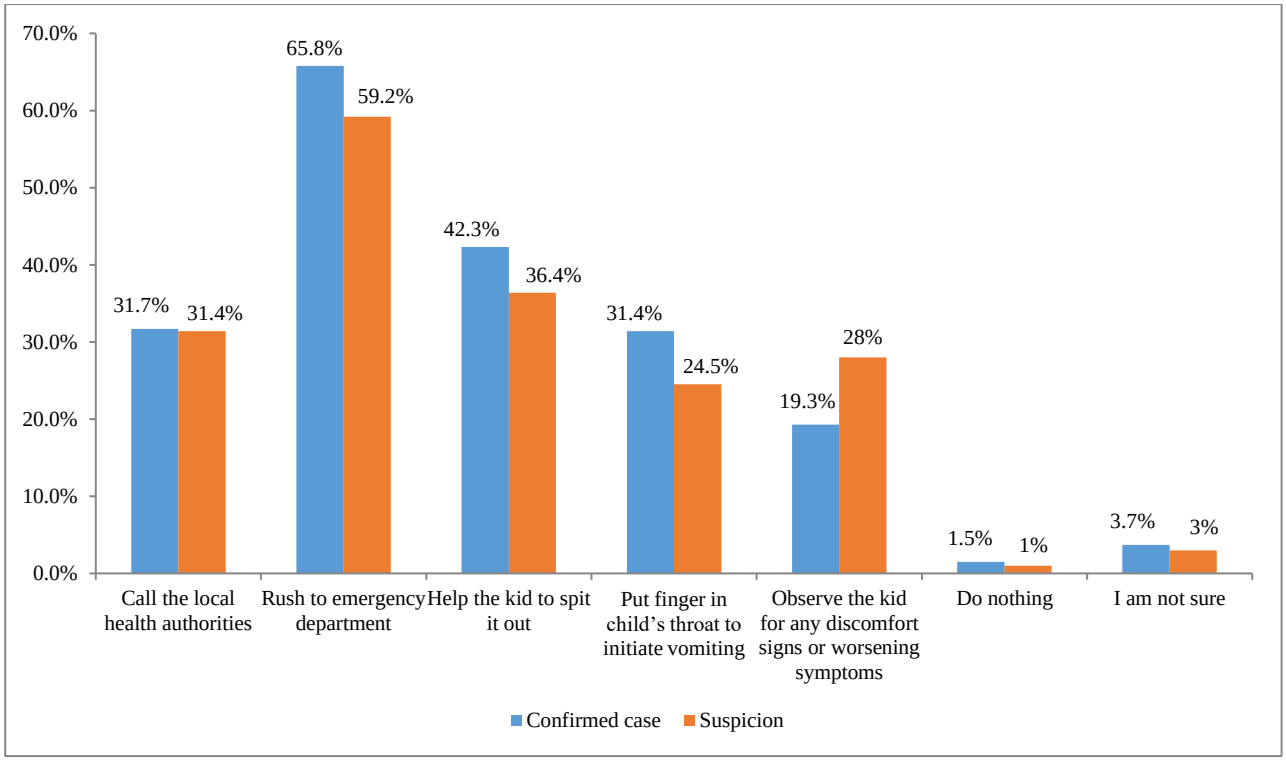

Figure 1: Participants actions in case of a confirmed case or a suspicion of medicine ingestion by a child

DISCUSSION:

Assessing family awareness regarding medications safety is important as more knowledge and awareness about medications safety would result in reduction of cases of accidental medicine ingestion by children [24].

Less than half (47.8%) of the participants had patients affected with chronic disorders at home and this was consistent with the findings reported in the study conducted by Santos, et al., in which half of the participants reported chronic disease in family [25]. The vast majority (90.3%) of the participants kept medicines at the premises of home and similar findings were also mentioned in the parallel study carried out by Masterionanni, et al., in which 91% participants were found to store medications at home [26].

More than one-third (36.9%) of the participants kept medicines in the cabinet or safe locker, where less than half (40.8%) mentioned keeping the medicine storage place locked every time, while more than one-third (35.9%) mentioned they were keeping it locked most of the time. However, the previously mentioned findings were found to be contradictory to the findings reported in the study conducted by Tourinho, et al., that there was unsafe storage of medicines in more than 22% participants [27].

About half (51%) of the participants were found to be storing medicines in only 1 place. The most frequently reported places for storing medicines were fridge and bedroom. Further, more than two-thirds (70.3%) of the participants ensure that medicines are placed out of the reach of children and this percentage was lower than the reported frequency in the other study which carried out by Hendous, et al., in which 90% participants were storing medications out of the reach by children [18].

The most reported types of medicines stored at home were analgesics (70%) followed by cough cold and congestion medicines (55.9%) and this was in contradiction to the results of the study carried out by Tsiligianni, et al., in which the most common type of medication stored was medications of cardiovascular diseases [28].

Moreover, nearly two-thirds (65.8%) of the participants would rush to emergency department if the case were confirmed and this was consistent with the findings reported in the congruent study conducted by Bilgen, et al., in which most of the participants would

approach the emergency department in the case of ingestion of medications by children [29].

CONCLUSION:

Good level of knowledge and awareness about safe storage of medicines at home was found among the participants. However, few knowledge gaps were noted regarding the correct procedures that were adopted when a confirmed or suspicious case of medications ingestion by children was observed. Level of knowledge and awareness could be improved by encouraging the role of media and activation of community social events which implements health educational programs.

Conflict of interests:

The authors declare that there is no conflict of interest regarding the publication of this article.

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