

**Poison Control and Drug Information Center: The Palestinian
Experience.**

Ansam F. Sawalha, Ph.D

Poison Control and Drug Information Center, An-Najah National University,
Nablus

Corresponding author:

Ansam F. Sawalha,

Associate Professor, Pharmacology and Toxicology,
Director, Poison Control and Drug Information Center (PCDIC),
An-Najah National University,
P.O.Box 7
Nablus,
Palestine.

e-mail: ansam@najah.edu

Tel.: 972-9-2345115, ext 2139

Mobile: 972-599-675501

Fax: 972-9-2345982

Key word: poison control, drug information, prevention, toxicology, Palestine.

Poison Control and Drug Information Center: The Palestinian Experience.

Abstract

Background and aims: The Palestinian poison control and drug information center (PCDIC) was established in 2006 to provide up-to-date information regarding medications and help in the early diagnosis and management of poisoning cases. This manuscript summarizes the activities carried out by the PCDIC in the past two years.

Methodology: Documented inquiries received at the PCDIC were analyzed. Activities of the PCDIC were extracted from the files. **Results:** During the first two years, a total of 323 inquiries were received at the PCDIC, mainly (67.2%) from physicians. Seventy percent of calls were made from Nablus. Unintentional poisoning was the leading type of calls (62.8%) followed by suicidal poisoning (20.7%). Medications were the major category of toxicants encountered (48.9%) followed by pesticides (23.5%). In 67.9% of the cases, the calls were initiated before any treatment was provided. The advice provided by the PCDIC was based on the nature of call. During the past 2 years, the PCDIC has conducted several academic and non-academic activities. The PCDIC introduced the concept of poison prevention weeks in Palestine and has conducted two so far. The PCDIC has published several manuscripts in the fields of toxicology, rational drug use, complementary and herbal therapy, pharmacoepidemiology, and self-medication. **Conclusion:** Documentation of all inquiries is mandatory for analysis, evaluation, comparative purposes, and quality assurance. More advertisement is needed to encourage people to use the services provided by PCDIC.

Introduction

It is extremely difficult to memorize and remember the adverse effects of the new chemicals that are constantly introduced into our world. Similarly, the number of medications approved for clinical use is continuously increasing, resulting in extra burden for the health care providers in deciding their doses, uses, and other medication-related issues. For the previous reasons and others, poison control and drug information centers were established with a major goal of providing information to those who needed it [1,2]. In Palestine, the only poison control and drug information center (PCDIC) was established in 2006 at An-Najah National University. Before the establishment of the PCDIC, poisoning cases were normally treated empirically or the Israel Poison Information Center (IPIC), Rampam Health Care Campus, Haifa/Israel was consulted. The PCDIC is equipped with several resources to answer inquires; those include Micromedex databases, several textbooks, internet sites, and periodicals. Several consultants work with the PCDIC staff in order to provide needed information. Some of the consultants are pediatricians; intensivists, pharmacists, plant specialists, and nurses. The PCDIC can provide information via phone, email, fax, or regular mail. .The PCDIC provides information and advice regarding medications and poisoning 24 hours a day, 7 days a week. The PCDIC can be visited through its website: http://www2.najah.edu/nnu_portal/index.php?page=86. The PCDIC is currently in the process of getting registered as a recognized center at the WHO/IPCS website. The PCDIC will be affiliated with the university medical teaching hospital and with the forensic and toxicology lab within the coming 2 years when the university hospital is in operation. The objective of this article was to summarize the activities carried out by the PCDIC in the past two years.

Methodology

Data for this article were extracted from the PCDIC archives. These data included: phone calls, academic and non-academic activities and finally research projects. All inquiries received in the past 2 years were analyzed. A pre-designed form was used to

fill out information pertaining to every received call. The form included questions related to the caller's identity, date and time, patient demographics, type of inquiry, the chemical or medication of interest, signs and symptoms, and the first aid/treatment provided before calling. A special section in the form is designed to include the advice provided by the PCDIC staff. All the data from the forms was entered, and statistically analyzed. In poisoning cases, the staff would seek information indicating the type of poisoning in order to classify it into unintentional or suicidal. All data were entered, statistically analyzed, and graphed using SPSS 15.

Academic and non-academic activities carried out by the PCDIC in the past 2 years were summarized. Particular emphasis was made on training and case discussion sessions provided for health professionals and those in the Palestinian National Authority ministries. Regarding research activities carried out by the PCDIC, an internet search was performed to list all publications made by the PCDIC staff. A descriptive narration of the research activities carried by the PCDIC is presented.

Results

In the past two years, the PCDIC has carried out four different types of activities: 1) providing information, advise, and guide patient management; 2) teaching and training students and health professionals in the field of poisoning and drug information; 3) raising the community awareness regarding poisoning and drug safety; and finally 4) conducting research in the field of pharmacoepidemiology, drug safety, and poisoning.

1. Provision of information, advice, and guiding patient management:

Analysis of the calls received by the PCDIC during the past two years revealed that 323 calls were made. Among those, 152 calls were made in the first year, and 171 were made in the second year. All callers were answered in the same day, most were answered during the call they made. Very few were answered with the next hour. The callers were made by physicians (67.2%), pharmacists (4%), and the general public (28.5%). Calls were made from different places in Palestine. However, most calls (70.3%) were made from Nablus district.

The received calls were analyzed to determine its nature. Analysis revealed that unintentional poisoning was the leading cause for calls (62.8%), followed by suicidal poisoning (20.7%), general information (10.8%), adverse reactions and drug information (5.5%) (Table 1). Analysis of the gender of the patients that were poisoned showed that 68.3% were males and 31.4% were females. The majority of the patients (54.0%) were below 6 years of age, while 5.9% were between the ages 6-18 years, and 40.1% were above 6 years of age. Drug information questions inquired about therapeutic uses, side effects, drug interactions, doses, and few about teratogenic potential of medications. It was found out that medications comprise the majority of toxicants encountered (48.9%), followed by pesticides (23.5%), cleaning products (10.8%), and plants (5.6%). (Figure 1). Fortunately, most of the patients were asymptomatic (44.1%). Gastrointestinal complaints (vomiting, nausea, abdominal pain, and diarrhea) were the second common complaints by the patients, followed by cholinergic system effects and others (Table 2)

The actions taken before calling the PCDIC were all recorded. Analysis of which had shown that in most (67.9%) of them, nothing has been done. Gastric lavage was performed in 23.6% of the cases, while activated charcoal was only given in 1.5% of all of them. After calling the PCDIC, the advice given ranged between administering activated charcoal to giving antidote. The majority of cases were only advised supportive and symptomatic (18.7%), followed by the advice to monitor the patients (18.5%), no treatment was needed in 15.7% of the cases, activated charcoal administration (12.7%), and the advice to administer an antidote was given to 12.3% of the cases (Figure 2).

2- Teaching and Training:

During the past two years, the PCDIC has carried out a series of professional workshops with the Ministry of Health, Ministry of National Trade, Ministry of Educations, and the Ministry of Agriculture. Such workshops were held with professionals for many purposes including: introducing national poison registry form, improving the product labels and including the toll free number of the PCDIC on the Palestinian products, rationale use of medications, proper use of pesticides, and the substitution of toxic materials with less toxic ones whenever possible.

Regarding teaching and education, the PCDIC also offers a course about toxic materials and how to prevent poisoning for all non-medical students at An-Najah National University. Additionally, toxicology case-study sessions are continuously held at the PCDIC for senior pharmacy students. Regarding the graduate students at the college of pharmacy, the PCDIC supervised them to prepare and give lectures to the physicians at the hospitals regarding the up-to-date treatment strategies for commonly encountered poisons.

3- Raising community awareness:

The PCDIC plays a central role in the public awareness regarding preventive measures of poisoning. In this regard, the PCDIC co-operates with non-medical organization such as the ministry of education in raising awareness among school students. This has been achieved by organizing two poison prevention weeks in the past two years, and is currently preparing to launch the third one. The PCDIC carries the responsibility to inform the general public about the potential hazardous materials around them, their risks, and the safe use and storage of such chemicals at home and work. Poison prevention weeks have become an annual activity by the center. During this week, two major activities are carried out, first an exhibition about poisons around us and how to prevent their harm. Visitors for this exhibition are school students and the general public. Second, several lectures are given at the local schools to educate the student about toxins, its harm, how to avoid it, and about the role of the PCDIC. Feedback reports about such activities are very supportive and encouraging.

4- Conducting research:

An important goal of the PCDIC is to conduct research to evaluate the current status of medications and poisons in Palestine. Since its official opening, the PCDIC has published several manuscripts. The focus of the research projects was on rational drug use, management of hazardous and poisonous substances, self-medication and risk of poisoning, and finally the toxic implications of herbal and other complementary and alternative medicine (CAM) practices. The research projects have led to many useful publications that will shape the future of health practice in Palestine. For example, a

published study conducted to evaluate antidote stocking at hospitals in northern Palestine indicated that most of the hospitals in Palestine were not well equipped to receive and properly treat poisoning cases and that none of the surveyed hospitals had the complete stock of antidotes [3]. Another published study regarding the storage and utilization of hazardous and dangerous cleaning products at home showed that bleach and acidic cleaners were not stored safely in most of the cases which led to adverse effects on people [4]. Others addressed the issue of complementary and alternative medicine [5]. Several publications from the PCDIC addressed the issue of rational drug use [6-7]. Another study on self medication practices has found that many Palestinians consume medicinal plants whose safety might be questionable. A study investigating the utilization of medications during pregnancy found that pregnant women do take both over the counter and prescription medications during pregnancy, especially analgesics and antibiotics, respectively. Most medication belonged to FDA categories B and C, but some were from FDA category D [8]. A study about medication dosing errors found that the doses of several medications were inappropriately adjusted based on renal function for many hospitalized patients [9]. One study was conducted to evaluate antibiotic consumption measured in defined daily doses (DDD) [11]. A study about the impact of admission blood glucose (ABG) on the outcome of acute myocardial infarction was conducted [12]. Finally, a study on warfarin use among patients with Atrial Fibrillation (AF) concluded that most physicians avoid prescribing anticoagulants for AF patients despite that there was no risk or contraindication for warfarin use [13].

Discussion

Even though the PCDIC is only two years old, many goals have been achieved and continuous work is being performed to fulfill all others. Utilization of the services provided by the PIDIC appears to be the most at Nablus district. Lower utilization from other places may indicate lack of knowledge of the PCDIC. There is a need to encourage more callers to utilize the services available at the PCDIC which can be done through more advertising in remote areas in Palestine. The PCDIC has a toll free number to encourage callers. The number of calls received daily by the PCDIC is much less than

that received by the IPIC or by any poison center at the US. This might be due to the fact that these centers have been established much earlier than the PCDIC.

The PCDIC was mainly established to provide unbiased, up-to-date information to health care providers regarding managing poisoning cases. This goal has been achieved with physicians since they constitute the majority of callers to the PCDIC. It seems that physicians utilizing the PCDIC services may feel unconfident or lack adequate knowledge in clinical toxicology thus they call immediately after a poisoning case was admitted, or whenever they suspect poisoning. It is not possible to evaluate the outcome of this service since follow up was not done with all the cases; even when it was done; it only was for few days after the poisoning incidence. Time elapsed between poisoning until calling PCDIC was not recorded and analysis of such a factor is not possible at the current time. Analytical toxicology testing is not currently performed at the PCDIC. Some poison centers function mainly as information providers such as those at the United States; others perform testing such as the IPIC and those in Saudi Arabia. The PCDIC is currently working with the forensic medicine institute to include forensic toxicology among its services. In identify the level of chemicals in the body; one needs different analytical instruments that are currently unavailable due to the limited budget.

Medications constitute the major causative agents of poisoning cases followed by pesticides. This might be due to the availability of many medications over the counter, loose pharmacy laws, and to people's tendency to consume medications in Palestine. Children like to mimic adults and they might take medications only for that reason. As for pesticides, many people work at farms and most of them store pesticides at the farm or in their homes. This had made it easy for others to reach these poisonous chemicals. Based on our professional evaluation of the management performed before calling the PCDIC, it is obvious that many physicians mismanage poisoning cases by performing unnecessary gastric lavage or vomiting, while administering less activated charcoal when it is indicated.

This may put the poisoned patients at increased risk, and it indicates the need for continuous medical education in the field of management of poisoning cases. Knowledge in the ABC's of poisoning, decontamination methods and when to use each one of them,

and patient stabilization are highly advisable for all physicians. The PCDIC can organize training courses for interested professionals regarding this issue.

Conducting poison prevention weeks were decided after realizing that most cases reported to the PCDIC were unintentional poisoning. Awareness regarding preventing poisoning is the major goals of such weeks. So far two has been organized in cooperation with the ministry of education and the college of pharmacy. Such weeks aim to decrease the possibility of unintentional exposure to toxicants and to educate people about the proper action in cases of poisoning. In the USA, they have a poison prevention week council with a website (<http://www.poisonprevention.org>). Most centers in the USA participate in such an activity in different methods such as distributing brochures, and giving classes to children on how to avoid poisoning. Internet search did not reveal any such activity conducted by the poison centers in the neighboring Arab countries.

The research conducted by the PCDIC was performed to gather a background on which to rely for future decisions, and it was published in quality journals. Copies of such research were sent to the interested ministries and institution in order to be taken into consideration, hoping to induce a positive change in the current practice and future plans. More research is currently being carried out in topics that are of importance to human health. Analysis of the publications from neighboring Arab countries revealed very few research articles that were published from their centers.

This study emphasizes the importance of proper documentation of all activities and inquiries of the PCDIC for quality improvement, research, and assessment. Most data collected by poison centers in developing countries are those reported to them [4], however, more effort is needed to collect data pertaining to poisoning on a national basis. Additionally, adopting a uniformed way of data collection will enable comparative studies between such countries in the future.

Acknowledgment

The PCDIC staff would like to acknowledge PADICO company/Palestine for its generous financial donations and support.

Table 1: Nature of inquiry

Type of inquiry	Number (%)
Unintentional poisoning	203 (62.8)
Suicidal poisoning	67 (20.7)
General information	35 (10.8)
Adverse effects	15 (4.6)
Drug information	3 (0.9)

Figure 1: Materials that were encountered in poisoning cases

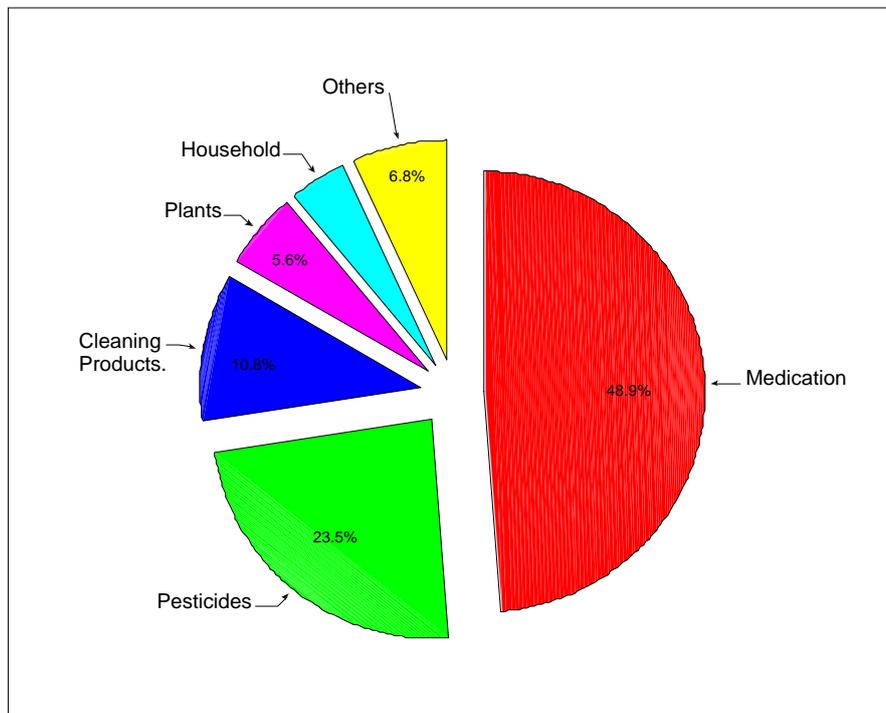
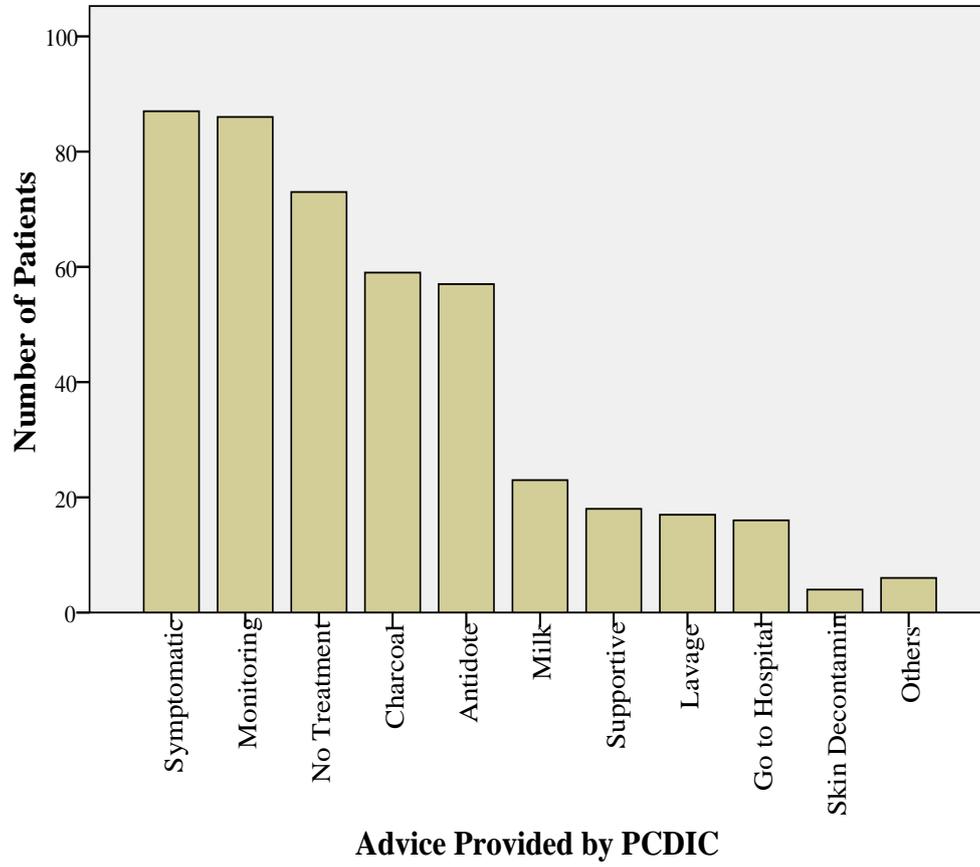


Table 2: Major complaints of the patients

Complaint	Number	Percentage
Asymptomatic	197	44.1
Vomiting	41	9.2
Nausea	26	5.8
Abdominal Pain	27	6.0
Cholinergic Effects	39	8.7
Respiratory Depression	15	3.4
Diarrhea	12	2.7
Allergy	8	1.8
Headache	7	1.6
Dryness	7	1.6
Drowsiness	13	2.9
Erythema	8	1.8
Bronchospasm	5	1.1
Coma	7	1.6
Burning	6	1.3
Irritation	5	1.1
Hypotension	3	0.7
Others	21	4.7

Figure 2: The advice provided by the PCDIC to the health care provides and the general public



References

- 1- United Nations, 1992, The Earth Summit, Agenda 21, Chapter 19 on environmentally sound management of toxic chemicals, including prevention of illegal traffic international traffic in toxic and dangerous product. At: <http://www.Un.org/esa/sustdev/documents/agenda21/English/agenda21chapter19.htm>
- 2- Laborde A.: New roles for poison control centers in the developing countries. *Toxicology*. 2004;198:273-277.
- 3- Sawalha AF, Sweileh WM, Zyoud SH, et al. Antidote Stocking at Hospitals in North Palestine. *Online J Health Allied Scs*.2006;4:4
- 4- Sawalha AF. Storage and utilization patterns of cleaning products in the home: toxicity implications. *Accid Anal Prev*. 2007 Nov;39(6):1186-1191
- 5- Sawalha AF. Complementary and alternative medicine (CAM) in Palestine: use and safety implications. *J Altern Complement Med*. 2007;13(2):263-269.
- 6- Sawalha AF, Sweileh WM, Zyoud SH, et al. Self-therapy practices among university students in Palestine: Focus on herbal remedies. *Complementary Therapies in Medicine*, In Press, Available online 7 February 2008.
- 7- Sawalha AF. Assessment of Self-Medication Practice among University Students in Palestine: Therapeutic and Toxicity Implications. *The Islamic University Journal*. 2007; 15 (2): 67-82.
- 8- Sawalha AF. Consumption of Prescription and non-Prescription: Medications by Pregnant Women .A Cross Sectional Study in Palestine. *The Islamic University Journal*. 2007; 15 (2): 41-57.
- 9- Sweileh WM, Janem SA, Sawalha AF, et al. Medication dosing errors in hospitalized patients with renal impairment: a study in Palestine. *Pharmacoepidemiol Drug Saf*. 2007 Aug;16(8):908-912.
- 10- Sawalha AF, Al-Bishtawi GO, Al-Khayyat LS, et al. Pattern of Parenteral Antimicrobial Prescription among Pediatric Patients in Al-Watani Government Hospital in Palestine. *An-Najah Univ. J. Res*. 2006; 20: 191-206.
- 11- Sweileh WM, Sawalha AF, AL-Haj Abed RM, et al. Utilization of Anti-infective Agents Measured in “Defined Daily Dose” (DDD): A Study in Palestine. *The Islamic University Journal*. 2007; 15 (2):59-66.

- 12- Sweileh MW, Sawalha AF, Salfeete SA¹, et al. Admission blood glucose level as a potential indicator for short-term mortality and morbidity after myocardial infarction. *International Journal of Diabetes in Developing Countries*. 2006;26(3):116-121.
- 13- Sweileh W, Jaradat N, Elawee M, et al A. Drug Interactions and Risk of Bleeding among Patients with Atrial Fibrillation (AF) Discharged with Warfarin. *An-Najah Univ. J. Res*. 2006; 20: 127-134.