Qat Consumption among Women Living in Yemen

S El-Zaemey[1], J Heyworth[2], L Fritschi[3]

[1]Section of Environment and Radiation, International Agency for Research on Cancer, Lyon, France.
[2]School of Population Health, The University of Western Australia, Crawley, Australia
[3]Western Australian Institute for Medical Research, The University of Western Australia, Nedlands, Australia

Qat (also known as *Khat*, *Kat*), is a green-leaved plant (*Catha edulis*) that is chewed for its stimulant effect in Yemen and some other countries in the Arabian Peninsula and the Horn of Africa.[1] There is concern that people who consume *Qat* are at high risk of pesticide exposure. It has been estimated that 70% of pesticides that are imported or smuggled to Yemen are used on *Qat*.[2] Studies conducted in Yemen indicated that some globally and nationally banned pesticides such as DDT, lindane, parathion, and dimethoate were still used on *Qat* as late as 2007.[3,4] However, it has recently been reported that some banned and restricted pesticides are smuggled into Yemen and are available in pesticide retail shops from where they are still bought and used by Yemeni *Qat* farmers (AR Thabit, personal communication, 2010). As *Qat* is a crop of high economic value; farmers tend to use pesticides and fertilizers heavily on *Qat* trees to protect them from pests, to ensure healthy plant growth and thus, to increase the yield and income.[4,5] Therefore, *Qat* maybe a potential source of pesticide exposure for consumers.

In 2003, a survey of residents in a randomly selected district of Yemen's capital city, Sana'a, was conducted to estimate the prevalence of *Qat* chewing. Through the use of self-administered questionnaires, it was estimated that 80% of men and 50% of women aged ≥13 yrs chew *Qat*.[7] However, the response fraction for this study was 30% and only 34 women were surveyed. Therefore, data on the nature and extent of use of *Qat* among Yemeni women was limited. We therefore conducted this study to investigate the amount and frequency of *Qat* consumption among women living in Yemen.

Ethical approval was granted for this study by the University of Western Australia Human Research Ethics Committee (UWA: RA/4/1406). A formal letter of support from the Ministry of Education in Yemen was presented to the schools visited, when requesting permission to carry out the study.

Participants included in this study were 410 married women who took part in a cross-sectional study of pesticide exposure among women living in Yemen between December 2011 and January 2012. The study population was defined as women who had a daughter enrolled in a school from year 10 to year 12, and living in the city of Sana'a or Sana'a governorate. Full details of the study population, questionnaire design and recruitment methods used have been published elsewhere.[6] The included women completed a questionnaire that obtained information on pesticide exposure including *Qat* consumption.

Of respondents, 55% were aged between 20 and 39 yrs; 45% were aged ≥40 yrs.[6] *Qat* consumption among women was very high with 278 out of 410 (67.8%, 95% CI: 63.3%–72.3%) women having ever consumed *Qat* during their lifetime. The

Cite this article as: El-Zaemey S, Heyworth J, Fritschi L. Qat consumption among women living in Yemen. *Int J Occup Environ Med* 2014;**5**:109-111.

Correspondence to Sonia El-Zaemey, PhD, Section of Environment and Radiation, International Agency for Research on Cancer, 150, cours Albert Thomas, 69372 Lyon Cedex 08, France
Tel: +334-72-73-8316
E-mail: ElzaemeyS@fellows.iarc.fr
Received: Jan 14, 2014
Accepted: Feb 24, 2014

Table 1: Characteristics of Qat consumption among women who chewed Qat, Sana'a, Yemen, Dec, 2011–Jan, 2012. Total may vary because of missing values.

Parameter	Number of Consumers (%) (n=278)
Start of consumption	
Before marriage	31 (11.3)
After marriage	244 (88.7)
Current chewer	
Yes	195 (71.4)
No	78 (28.6)
Duration (yrs)	
<1	55 (20.4)
1–2	31 (11.5)
2–5	39 (14.4)
≥5	145 (53.7)
Frequency of consumption	
Monthly or on occasions	103 (38.7)
1–2 per wk	32 (12.0)
3–5 per wk	43 (16.2)
6–7 per wk	88 (33.1)
Hours of consumption/per session	
<2	89 (33.8)
2–4	117 (44.5)
4–6	51 (19.4)
>6	6 (2.3)

Continued

Table 1: Characteristics of Qat consumption among women who chewed Qat, Sana'a, Yemen, Dec, 2011–Jan, 2012. Total may vary because of missing values.

Parameter	Number of Consumers (%) (n=278)
Qat washing before chewing?	
Always or almost always	162 (61.1)
Often	36 (13.6)
Sometimes	51 (19.3)
Never or almost never	16 (6.04)
Average amount the family spends on Qat every week (Yemeni Rials [US$])	
<500 [<2]	65 (25.6)
600–2500 [3–12]	80 (31.5)
2600–5000 [12–23]	35 (13.8)
>5000 [>23]	74 (29.1)

characteristics of *Qat* consumption by participants are shown in Table 1. Among those who chewed *Qat*, the majority started consuming it after marriage (89%) and more than half of the women (54%) had consumed *Qat* for five years or more. The frequency of *Qat* consumption was variable, with 39% of women consuming it monthly or occasionally, while a further 33% consumed it almost daily. Most of the women always or almost always (61%) used water to wash their *Qat* before consumption. Twenty-nine percent of women reported that the family spend more than 5000 Yemeni Riyals (≈ US$ 23) weekly on *Qat*.

Due to the extensive use of pesticides

on *Qat*, there are concerns that people who consume *Qat* before any treatment (*eg*, washing) may ingest significant quantities of pesticides.[8] Health problems such as weakness, a runny nose or congestion, headache, and gingivitis have been reported in men after chewing contaminated *Qat*.[8]

This study provides preliminary data suggesting that women in regions where *Qat* chewing is common are possibly exposed to pesticides. Therefore, research is needed to identify the extent of pesticide exposure of Yemeni women who chew *Qat*.

Acknowledgments

The authors thank the Breast Cancer Environment and Employment Study (BCEES) study team, schools, students and women for their assistance.

Conflicts of Interest: None declared.

Funding Source: Sonia El-Zaemey is supported by an Australian Postgraduate Award from the University of Western Australia. Lin Fritschi is supported by a Fellowship from the National Health and Medical Research Council.

References

1. El-Wajeh YA, Thornhill MH. Qat and its health effects. *Br Dent J* 2009;**206**:17-21.
2. Apps A, Matloob S, Dahdal MT, Dubrey SW. Khat: an emerging threat to the heart in the UK. *Postgrad Med J* 2011;**87**:387-8.
3. Al-Hadrani AM, Thabet AMM. Acute adverse health effects of pesticides sprayed on khat trees. *Journal of Pesticide Control and Environmental Sciences* 2000;**8**:97-106.
4. Food and Agriculture Organization (FAO), Ministry of Agriculture and Irrigation (MAI). [Production of Qat in Yemen, water use and the competitive alternatives available to policy change]. 2008, Available from *www.yemen.gov.ye/portal/%D8%A7%D9%84%D8%A5%D8%B5%D8%AF%D8%A7%D8%B1%D8%A7%D8%AA/tabid/2580/Default.aspx* (Accessed May 1, 2012). [in Arabic]
5. Al-Ghory AA. Sociogeographical situation analysis of resource management for al-Mawasit district/ Yemen. [Berlin]: Freie Universitaet Berlin; 2004. Available from *www.diss.fu-berlin.de/diss/receive/FUDISS_thesis_000000001302* (Accessed January 25, 2014).
6. El-Zaemey S, Fritschi L, Heyworth J. Occupational pesticide exposure among Yemeni women. *Environ Res* 2013;**122**:45-51.
7. Basunaid S, van Dongen M, Cleophas TJ. Khat abuse in Yemen: a population-based survey. *Clin Res Regul Aff* 2008;**25**:87-92.
8. Date J, Tanida N, Hobara T. Qat chewing and pesticides: a study of adverse health effects in people of the mountainous areas of Yemen. *Int J Environ Health Res* 2004;**14**:405-14.