

## COMMENTARY

# Challenges and Strategies for Quantitative and Qualitative Field Research in the United Arab Emirates

Tar-Ching Aw\*, Taoufik Zoubeidi, Fatma Al-Maskari, Iain Blair

### Abstract

Clinical and public health research depends on factors including national systems, socio-cultural influences, and access to organisations and individuals. As a 'new' country, the United Arab Emirates (UAE) has yet to develop strong support for population research. However, there is interest in research. The challenges for quantitative and qualitative research include the varied composition and mobility of the UAE population, with limited health records and disease registries. Long-term follow-up of patients, and tracing foreign workers who may only be in the UAE for a few years, are two major obstacles for longitudinal studies. There can also be a reluctance shown by parts of the population to participate in studies, especially those that require responding to what is perceived as sensitive questions. Successful execution of population research in the UAE requires an understanding of socio-cultural aspects of the study population, and good communication between researchers and participants.

**Keywords:** United Arab Emirates- qualitative and quantitative research - population-based - cancer

*Asian Pacific J Cancer Prev*, 12, 1641-1645

### Introduction

The success of population research in any country requires an understanding and appreciation of many local factors, such as legislation, population composition, socio-cultural attitudes and beliefs, and access to individuals, families, and organisations. In a new country such as the UAE, which was established in 1971 and consisting of seven emirates (UAE Yearbook, 2010), a strong infrastructure for population research is yet to be developed. There is, nevertheless, considerable interest in conducting research on the health risks and health status of the UAE population (Aw, 2010). This includes research on the extent and prevention of acute conditions, e.g. road traffic and workplace injuries; and chronic diseases, e.g. cardio-vascular disease and cancer. There are, however, challenges unique to the UAE and the surrounding countries in the Middle East. There are also other hurdles that are common to the conduct of research in rapidly developing countries. Several strategies can be considered in an attempt to improve the likelihood of success for research initiatives in these countries.

### Challenges for Field Research Involving Human Subjects

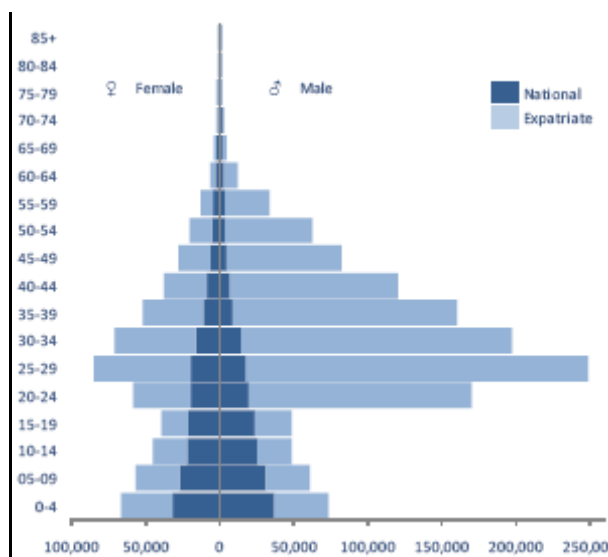
Many challenges exist in the UAE in regards to both quantitative and qualitative research. Some are specific to the Middle East, while others apply to other regions such as the Far East and Asia. The challenges include:

#### (i) Structure and heterogeneity of the UAE population

In regards to population studies, the most recent estimate of the UAE's population is 8.26 million inhabitants comprising less than 15% nationals, with the rest made up of foreign workers from many different countries (Health Authority Abu Dhabi, 2009). Other than Qatar, few other countries world-wide have a similar population structure. There are individuals and families from the Middle East and North Africa (e.g. Egypt, Lebanon, Iraq, Sudan, and Somalia), Asia (e.g. India, China, Pakistan, Bangladesh, Thailand, and the Philippines), and the West (e.g. the United States, Canada, the UK and other European countries). There are also residents from South Africa, Australia and New Zealand. The small proportion of nationals and the heterogeneity of the foreign inhabitants pose a challenge in obtaining a representative sample of the UAE population for epidemiological studies. This is especially as there is widespread variation between communities in terms of socio-cultural and religious beliefs, dietary preferences, and health behaviour (Qureshi, 1989). Such differences are also apparent between communities from different Arab countries in the Middle East (Hamdy and Nasir, 2008).

The UAE has a unique population structure which must be taken into account when planning research and selecting the appropriate denominator for incidence and prevalence data. In the emirate of Abu Dhabi (the largest of the seven emirates forming the UAE), the total population is estimated to be 1.9 million of whom 995,378 (52%) are

*Department of Community Medicine, United Arab Emirates University, Al-Ain, United Arab Emirates \*For correspondence: tcaw@uaeu.ac.ae*



**Figure 1. Population by Age, Gender and Nationality, Emirate of Abu Dhabi, 2009 (Source: Health Authority Abu Dhabi, 2009)**

expatriate males aged 20-59 years (Health Authority Abu Dhabi, 2009). There are proportionally many more males than females in this age band. This reflects the greater influx of male foreign workers, who move to the UAE for employment often not accompanied by their spouses. The discrepancy between number of males and females is shown in the population pyramid (Fig. 1) for Abu Dhabi. The multi-ethnic composition of the UAE population requires that where administration of field questionnaires is proposed, several comparable versions of the questionnaire have to be prepared. Survey instruments and other survey materials often have to be in a few languages (e.g. Arabic, English, and Urdu). This is also true in other countries with diverse populations. For example, in Malaysia, field questionnaires designed in English are often translated into Malay, with back translations to ensure comparability between the English and Malay versions (Edimansyah, Rusli, Naing, and Mazalisah, 2006). In Singapore, it is common for questionnaires to be available in three languages - English, Malay and Chinese (Chia, Chia and Tan, 2000).

### (ii) Recruiting study subjects

Both quantitative and qualitative research requires access to study populations. Epidemiological studies need numbers of study subjects dependent on sample size calculations relevant to the research questions and study design. To enable sufficient power for an epidemiological study to detect a true difference between groups, large numbers of participants are often required. By comparison, qualitative studies usually involve much smaller numbers of study subjects (around 30 participants), with each often taking part in a longer duration interview (Onwuegbuzie and Collins, 2007). For qualitative studies, an important factor is to have sufficient numbers to reach data saturation.

For epidemiological studies, locating UAE participants is hampered by frequent changes in the locations where individuals and their families live. For example, with the rapid development and urbanisation of the cities of

Dubai and Abu Dhabi, the cost of home rentals increased rapidly, and many families moved to other nearby emirates that were less expensive. With the recent economic slowdown in the Middle East (as in other parts of the world), there is now a trend for households to move back to the cities where there has been a reduction in costs for accommodation. Sampling frames based on old lists of addresses that have not been updated may lead to difficulty in finding selected study participants who have recently moved away.

A major limitation in regards to making contact with study participants is the absence of a postal system in the UAE. Communication with study participants by post is not feasible, and other novel approaches have to be used. This includes data sources held by local authorities, and by use of mobile telephones. Almost every adult in the UAE has possession of one or more mobile phones (Anon., 2011).

Longitudinal studies can face considerable loss to follow-up. This applies especially to foreign workers who may only stay in the UAE for a limited time. They may then return to their home countries to join their families, or re-locate to other countries to seek alternate employment with better pay and/or conditions or to further their careers.

### (iii) Maintaining participation

Participation rates vary depending on the nature of research and the choice of study populations. Women recruited for studies on breast cancer may be reluctant to take part because they could well require the agreement of their spouses or family members e.g. a parent or sibling before answering questions on ill-health. Denial of the occurrence of any cancer is understandable in cultures where the presence of a history of a malignant disease could affect the social standing or even the marriage prospects of other family members. The social stigma of having a potentially deadly condition is not restricted to the Arab world, and has also been reported in South America and among ethnic Chinese women in Australia (Nasir and Al-Qutob, 2008). However, in the UAE and in many other rapidly developing countries nowadays, the trend is for women in society to make decisions for themselves without necessarily having to ask a third party for permission to talk to a healthcare provider or medical researcher about matters pertaining to their own health. It appears easier to obtain participation for health interviews, if these are conducted in healthcare settings such as primary care clinics or hospitals, instead of in homes. Careful planning is important when considering household interviews in the UAE. Permission should be obtained from the head of the household to use their home for interviews, and often the interviews have to be scheduled during the evenings when the head of household is available.

Where in-depth interviews are planned, as in qualitative studies, the duration of the interview, use of tape recording devices, and timing of interviews are key considerations. Field interviewers have to be careful in the line of questioning used, and to be aware of socio-cultural sensitivities – especially questions on experience of disease and reasons for delay in seeking

clinical advice. Given the conservative nature of the UAE society, it is preferable to use female interviewers for female participants, especially when inquiring about personal and health matters.

Overall, the UAE population today has been quite responsive to recruitment in surveys and research project. Response rates of up to 93% in interview-based household surveys have been attained (Faculty of Medicine and Health Sciences, UAE University website, 2011). This may be due to the familiarity of householders with a relatively recent increase in population surveys, and phone and home marketing campaigns. With the high rates of economic growth and an expansion of research activities in the UAE, survey response rates may well decline to the levels experienced by countries with high survey and marketing activities.

For research that requires clinical assessments, study subjects could be reluctant to be 'examined' by other than their own physician. This also applies to procedures that may be perceived as intrusive, although in western countries these are often considered acceptable e.g. anthropometric measurements. Field studies proposing collection of biological samples, especially blood samples, are problematic in many countries. There are unwarranted concerns over possibly acquiring infections from venepuncture, and genuine worries about discomfort from the procedure, what the samples are going to be analysed for, and any subsequent side effects.

If environmental sampling for exposure to carcinogens or other pollutants are part of a research protocol, the placing of devices in houses for such sampling would need to be carefully explained to the head of the household. The participants need assurance about what the devices are measuring, whether there are any likely risks (real or imagined) to family members from these devices, and that an explanation would be provided about what the measurements show. Provision and interpretation of findings and results to participants from both biological and environmental sampling are important considerations to ensure future cooperation in any follow-up studies. Giving adequate feedback also adds to the credibility and reputation of the researchers.

#### (iv) Lack of data

Unavailability in the public domain of sampling frames or master samples of the UAE population is a hurdle in the selection of representative samples of the target population. A sampling frame is a list of the populations units (households, individuals, etc.) from which study samples are drawn. Master samples are relatively large random samples from the general population from which sub-samples may be selected for specific surveys. Master samples are used as alternatives to the sampling frame of the whole population because they are easier to manage and update.

In the UAE, an important source for the sampling frame in regards to the UAE population is the population census. The last two population censuses were by the Ministry of Economy in 1995 and 2005 (Central Department of Statistics, 2005). The census data is updated periodically by the Ministry of Economy and the National Bureau

of Statistics (UAE National Bureau of Statistics, 2011). Sampling frames for the local population of each emirate are also maintained by local government departments (e.g. the municipalities, urban planning departments and local statistics centres). Governmental agencies can provide valuable assistance in drawing representative samples in large studies of national interest, but depending on time and staff constraints, the sampling process may not always be in accordance with the requirements of researchers.

Information on exposures and health effects in the UAE is scarce. There is a dearth of published data on exposure to carcinogens or other hazardous materials - in homes, at workplaces or in the general environment. Information on cancer occurrence is limited to hospital-based registries (Tawam Annual Cancer Program, 2009). Despite attempts to start a national cancer registry for the whole of the UAE, there is currently no viable coordinated registry providing up-to-date data on the incidence and prevalence of different cancers. An initiative from different Gulf Cooperation Council (GCC) countries ten years ago to collate and provide information on cancers indicated that breast cancer was the commonest cancer amongst females in GCC countries. Data from different sources showed that the age-standardised incidence rate for breast cancer in the UAE in 1998 was 15.5 per 100,000 (Denic and Bener, 2001) to 17.1 per 100,000 from 1998 to 2001 (Al-Hamdan et al, 2009). The trend seems to indicate an increasing incidence, which is in keeping with time trends for female breast cancer worldwide (Weiderpass, Meo and Vainio, 2011). However, because of the limitations in the completeness and quality of the data collected, caution has to be exercised in the interpretation of information showing changes in cancer experience over time. The absence of systematic efforts to collect nationwide information on cancers would mean inadequate cancer surveillance, with inherent difficulties for epidemiologic studies on cancer.

Similar constraints exist in the UAE in regards to a national registry for conditions such as birth defects, and trauma. A local registry on congenital abnormalities based in three major hospitals in Al-Ain was established in 1992 (International Clearinghouse for birth defects surveillance and research, 2006). Proposals were also made for a staged approach to develop a national trauma registry in the UAE (Shaban et al, 2010), although this had yet to be implemented efficiently.

## Strategies for Success in the Conduct of Research in the UAE

### *Applicable approaches*

1) To obtain suitable sampling frames of the target population from which samples can be drawn, an appreciation of the 'ownership' of the main data sets and what clearances and approvals are required is needed. These are often government agencies or departments. If census data is required over and above what is summarised in official publications such as the 2005 General Census of Population report published by the Ministry of Economy, a formal approach to the Ministry is necessary. Census data was used for a UAE health and lifestyle survey in 2000.

(Badrinath et al, 2002). The most recent national census in the UAE was conducted in 2005; the census that had been planned for 2010 did not take place for a variety of reasons including a lack of resources. Hence, up-to-date census data is not available, although annual updates from samples of the population have provided estimates of population changes in the UAE.

2) As representative samples of the total UAE population are difficult to obtain, many studies have limited the target population to Emiratis, and excluded foreign workers. To obtain samples of the Emirati population, an alternative approach is to approach the utility companies. For example, records from the electricity companies have separate lists for Emirati and non-Emirati households (as different tariffs apply for electricity use by nationals and non-nationals). A recent household survey successfully used a list of 40,000 houses held by a local electricity supply company to randomly select a sample of 1600 houses (Saadi et al, 2007). Of the 1600 households, 600 were contacted and although 25 were excluded on the basis of being geographically remote, 452 were occupied and yielded 2455 adults to participate in the study.

3) Another method to obtain a reasonable study sample is to contact the local education authority. Shah et al, in 2011 received the support of the local education authority to recruit a sample of 1630 children and adolescents by sampling from schools in the city of Al Ain. The process of selecting schools by cluster sampling was facilitated through good communication and liaison with the education authority and the schools. Consideration had to be given to providing an adequate explanation to schools that were selected, and also to those that were not selected.

4) Local costs have to be carefully determined when applying for research funding. There are considerable differences between locations in terms of costs and availability of field staff and interviewers, providing transport for field visits or household interviews, purchase of equipment such as environmental hygiene sampling devices for exposure assessment, and storage and transport of field samples. Training costs for research staff should also be considered during budgeting. Laboratory facilities for specific analysis of environmental or biological samples may have to be identified overseas, especially when there is a requirement for laboratories to belong to an approved quality control scheme. For histological diagnosis of tissue samples collected from patients as part of research projects on cancer, expert histo-pathologists are in short supply in the UAE. Shortage of expert personnel to assist in research is also experienced in many other countries.

## International Collaboration for Research in the UAE

International research efforts involving collaborators attempting to work in multi-national teams could do well to understand local customs, practices and procedures for research. This is essential when resolving differences between collaborators, and also for obtaining ethical

approval from local Ethics committees. Bulgiba and Dahlui (2010) have referred to the need for openness and transparency, and the avoidance of unequal partnerships in international collaboration. The likelihood of continuing participation of international collaborators in research for the UAE is influenced by the initial local experience in regards to the success or otherwise of the team efforts in protocol planning, field activity, and research output.

## Conclusions

Quantitative and qualitative health research usually involves interaction with participants selected from the local population. The research processes can require responses to questions posed by interviewers on health and related factors, some of which can be sensitive. Studies on health may also include clinical examination or assessment, or collection of biological or environmental samples. An understanding and appreciation of local beliefs and practices is essential for the successful conduct of field research. It is also important to know where and how to obtain adequate information and assistance. Despite the limitations identified, the United Arab Emirates, with its unique characteristics in regards to population and culture, offers interesting prospects for comparative research on cancer and other chronic diseases or acute conditions.

## Acknowledgements

Our thanks to Dr. Maria Aamir from Tawam Hospital-Johns Hopkins Medicine International, Al-Ain for providing information and insights into data collection on cancer in the UAE.

## References

- Al-Hamdan N, Ravichandran K, Al-Sayyad J, et al (2009). Incidence of cancer in Gulf Cooperation Council countries, 1998-2001. *East Med Health J*, **15**, 600-11.
- Anonymous (2011). Worldwide mobile phone usage averages per capita. Available at: [www.simonlydeals.mobi/worldwide-mobile-phone-usage-averages-per-capita](http://www.simonlydeals.mobi/worldwide-mobile-phone-usage-averages-per-capita) [Accessed on 27th April 2011]
- Aw TC (2010). Global public health and the United Arab Emirates. *Asia-Pacific J Publ Hlth*, **22 Suppl**, 19S -24S
- Badrinath P, Al-Shboul QA, Zoubeidi T, et al (2002). Measuring the health of the nation: United Arab Emirates Health And Lifestyle Survey 2000. Faculty of Medicine & Health Sciences and College of Business and Economics, Al-Ain, 2002.
- Bulgiba AM, Dahlui M (2010). Developing global public health links in Southeast Asia. *Asia-Pacific J Publ Hlth*, **22 Suppl**, 14S-18S
- Central Department of Statistics (2005). General census of population. Ministry of Economy, United Arab Emirates.
- Chia SE, Chia HP, Tan JS (2000). Prevalence of headache among handheld cellular telephone users in Singapore: a community study. *Environ Health Perspect*, **108**, 1059-62.
- Denic S, Bener A (2001). Consanguinity decreases risk of breast cancer – cervical cancer unaffected. *Br J Cancer*, **85**, 1675-9.

- Edimansyah BA, Rusli BN, Naing L, et al (2006). Reliability and construct validity of the Malay version of the Job Content Questionnaire (JCQ). *Southeast Asian J Trop Med Public Hlth*, **37**, 412-6.
- Faculty of Medicine and Health Sciences, UAE University website (2011). Available at: <http://www.fmhs.uaeu.ac.ae/cmd/> [Accessed on 30th April, 2011]
- Hamdy SF, Nasir LS (2008). Culture and health. In: Nasir LS, Abdul-Haq AK, editors. *Caring for Arab Patients: a Biopsychosocial Approach*. Oxford: Radcliffe Publishing; p. 5-17
- Health Authority Abu Dhabi, 2009. Health Statistics 2009. Available from <http://www.haad.ae/HAAD/LinkClick.aspx?fileticket=SFBJ8BXGkHM%3d&tabid=349> [accessed on 30th April 2011].
- International Clearinghouse for Birth defects surveillance and research (2006). Annual Report 2006. Rome: ICBD
- Nasir LS, Al-Qutob R (2008). Gender and health. In: Nasir L, Abdul-Haq AK, editors. *Caring for Arab patients: a biopsychosocial approach*. Oxford: Radcliffe Publishing; p.27-59
- Onwuegbuzie AJ, Collins KMT (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report* 12(2):281-316. Available at [www.nova.edu/ssss/QR/QR12-2/onwuegbuzie2.pdf](http://www.nova.edu/ssss/QR/QR12-2/onwuegbuzie2.pdf) [Accessed on 27th Apr 2011].
- Qureshi B (1989). *Transcultural medicine: dealing with patients from different cultures*. London: Kluwer Academic Publishers; 1989.
- Saadi H, Carruthers SG, Nagelkerke N, et al (2007). Prevalence of diabetes mellitus and its complications in a population-based sample in Al Ain, United Arab Emirates. *Diabetes Res Clin Pract*, **78**, 369-77.
- Shaban S, Eid HO, Barka E, et al (2010). Towards a national trauma registry for the United Arab Emirates. *BMC Research Notes*, **3**, 187.
- Shah S et al. (2011), Blood Pressure and Obesity in UAE Youth aged 12-17 years. Presented at the International Childhood and Adolescent Obesity Conference of the International Diabetes Federation, Abu Dhabi, United Arab Emirates, 28 February-01 March, 2011.
- Tawam Annual Cancer Program (2009). Tawam Hospital Cancer Programme Annual Report, 2009. Al-Ain, United Arab Emirates.
- United Arab Emirates Yearbook 2010. Available at [www.uaeyearbook.com](http://www.uaeyearbook.com) [Accessed on 29th March 2011].
- United Arab Emirates National Bureau of Statistics, 2011. Population estimates 2006-2010. Available at: <http://www.uaestatistics.gov.ae/ReportPDF/Population%20Estimates%202006%20-%202010.pdf> [Accessed on 30th April 2011].
- Weiderpass E, Meo M, Vainio H (2011). Risk factors for breast cancer, including occupational exposures. *Saf Health Work*, **2**, 1-8.