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The Saudi National Mental Health Survey: Survey instrument and field procedures

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Abstract

Objectives: To present an overview of the survey and field procedures developed for the Saudi National Mental Health Survey (SNMHS).

Methods: The SNMHS is a face-to-face community epidemiological survey of DSM-IV mental disorders in a nationally representative sample of the household population in the Kingdom of Saudi Arabia (KSA) (n = 4,004). The SNMHS was implemented as part of the WHO World Mental Health (WMH) Survey Initiative. WMH carries out coordinated psychiatric epidemiological surveys in countries throughout the world using standardized procedures designed to provide valid cross-national comparative data on prevalence and correlates of common mental disorders. However, these procedures need to be adapted to the unique experiences in each country. We focus here on the adaptations made for the SNMHS.

Results: Modifications were needed to several interview sections and expansions were needed to address issues of special policy importance in KSA. Several special field implementation challenges also had to be addressed because of the need for female interviewers to travel with male escorts and for respondents to be interviewed by interviewers of the same gender.

Conclusions: Thoughtful revisions led to a high-quality field implementation in the SNMHS.

KEYWORDS

Composite International Diagnostic Interview (CIDI), World Mental Health (WMH) Survey Initiative, Saudi National Mental Health Survey (SNMHS)

1 | INTRODUCTION

This article presents an overview of the survey instrument and field procedures used in the Saudi National Mental Health Survey (SNMHS), a national survey of common mental disorders in the Kingdom of Saudi Arabia (KSA). The SNMHS is a project of the King Salman Center for Disability Research. Its collaborating partners include the King Faisal Specialist Hospital and Research Centre, the Saudi Ministry of Health, King Saud University, the Ministry of Economy and Planning, and the General Authority for Statistics. The SNMHS is implemented as part of the World Health Organization (WHO) World Mental Health (WMH) Survey Initiative (Alonso, Chatterji, & He, 2013; Kessler & Üstün, 2008; Scott, de Jonge, Stein, & Kessler, 2018). An overview of the rationale and aims of the survey are presented in a prior paper in this issue (Al-Subaie, Al-Habeeb & Altwaijri, 2020). A description of the sampling design is presented in the next paper (Mneimneh, Heeringa, Lin, Altwaijri & Nishimura, in press). The current paper describes the interview schedule and field procedures used in the survey.

2 | SURVEY INSTRUMENT

WMH carries out coordinated psychiatric epidemiological surveys of common mental disorders in countries throughout the world (Alonso et al., 2013; Kessler et al., 2008; Scott et al., 2018). A standardized interview schedule and consistent field implementation procedures are used to provide valid comparative data on the prevalence, burden, treatment, and correlates of mental disorders around the globe for policy planning purposes (Harkness et al., 2008; Heeringa et al., 2008; Pennell et al., 2008). The SNMHS survey, as one of the WMH surveys, used the same instrument and procedures. However, modifications of both the instrument and procedures are often needed to improve the cultural validity of the WMH survey. This was the case in the SNMHS. In this section of the article, we focus on modifications to the instrument.

The survey instrument in the WMH surveys is the Composite International Diagnostic Interview Version 3.0 (CIDI 3.0; Kessler & Ustün, 2004), a fully structured diagnostic interview designed to be used by trained lay interviewers to assess common mental disorders and important correlates of these disorders in the general population. The symptom questions are designed to generate diagnoses according to the definitions and criteria of both the ICD-10 (World Health Organization, 1991) and DSM-IV (American Psychiatric Association, 2000) diagnostic systems, although DSM-IV criteria are being used in the SNMHS. A subsequent paper in this issue describes the validity of the CIDI and modifications to key diagnostic sections for the SNMHS (Kessler et al., 2020). We focus in the current paper on the modifications made to nondiagnostic sections of the CIDI.

Table 1 lists the CIDI sections used in the SNMHS arranged in a conceptual order rather than in order of assessment. (Table 1) The instrument had a total of 38 sections, 32 from the original CIDI and 6 added for the SNMHS. The original CIDI sections began with an introductory screening section designed to prime active memory search for recalling lifetime disorders. Seventeen diagnostic sections followed this introductory section: seven for anxiety disorders; two each for mood disorders, substance use disorders, and disorders that begin in childhood; and three for other disorders. One additional section then assessed treatment across all disorders followed by five sections that assessed sociodemographics and four that assessed other correlates. The six sections added for the SNMHS were on the topics of disability, dementia, social satisfaction, attitude toward alcohol use, polygamy, and religiosity. The remainder of this section reviews these last six sections.

2.1 | Disability

Saudi policy planners have considerable interest in the extent to which mental disorders lead to or exacerbate the disability caused by physical illness. In an effort to learn more about these processes than was possible with the existing CIDI questions, the SNMHS added a translated

TABLE 1 An outline of the Saudi version of CIDI 3.0

I. Screening and lifetime review	
II. Disorders	
Mood	Major depression, mania
Anxiety	Panic disorder, social phobia, agoraphobia with and without panic disorder, generalized anxiety disorder, post-traumatic stress disorder, obsessive–compulsive disorder, separation anxiety disorder
Substance use	Alcohol dependence, illegal substance use
Childhood	Attention-deficit/hyperactivity disorder, conduct disorder
Other	Intermittent explosive disorder, premenstrual disorder, psychosis screen, eating disorder
III. Functioning	Suicidality, 30-day functioning, 30-day symptoms
IV. Treatment	Treatment of mental and substance disorders
VI. Other correlates	Childhood experiences, family burden, personality, physical disorders, social satisfaction
V. Socio-demographics	Children, employment, finances, marriage, other sociodemographics
VII. Country-specific sections	Attitude toward alcohol use, religiosity, polygamy, disability, dementia, disability burden

Abbreviation: CIDI, Composite International Diagnostic Interview.

Arabic version of the Physical Limitation Scale (PLS; Gayman, Turner, & Cui, 2008). The PLS assesses various physical limitations using the response categories *easy*; *has difficulty but does by self*; *requires assistance*; *dependent on others*; *do not know*; and *refusal*. An additional section on "disability burden" was also unique to the SNMHS. This section asks the household informant to report on the extent to which each household member experiences each of eight different types of disability using response categories *a lot*, *some*, *a little*, and *not at all*.

2.2 | Dementia

Given the extended family structure of many Saudi households, concerns exist that the aging of the population is leading to an increase in family burden associated with caring for elderly relatives at home. The dementia section was included to assess this burden using the Functional Activities Questionnaire (FAQ; Pfeffer, Kurosaki, Harrah Jr., Chance, & Filos, 1982). The FAQ is designed to be administered to a household informant who reports the extent to which another household member is impaired in each of several areas of daily living. In the SNMHS, we implemented the FAQ by having the household informant used at the initial household listing stage (described below in the subsection on Data Collection in the Field Procedures section) report on whether any household members should be excluded from completing an interview because of impairments that would make it difficult or impossible to carry out the interview. When an elderly family member was designated as an exclusion of this sort, the FAQ was administered to the family member(s) completing the survey to report on the elderly family member. Questions in the FAQ assess level of difficulty of the target household member in managing daily activities (e.g., paying bills or remembering one's medications) using the response categories *normal or never did* (the activity) *but could do now* (score 0); *have difficulty but could do it by self or never did and would have difficulty now* (score 1); *requires assistance* (score 2); and *dependent* (score 3).

2.3 | Social satisfaction

This section was adapted from a scale used by Krause and Borawski-Clark (1995), as well as from the Satisfaction with Participation in Discretionary Social Activities Scale (PROMIS, 2015) in order to add a more positive focus than in the CIDI assessments of mental disorders. A few other items that apply to the Saudi culture were also added to this section. The section assessed social satisfaction with respondent's relationship with family members, relatives, friends, and social and leisure activities. Example statements included: "I am satisfied with the amount of emotional support I get from my close family members."

2.4 | Attitude toward alcohol use

Alcoholic beverages are banned in KSA. In an effort to gauge public opinion on that topic and determine the extent to which this is related to current patterns of alcohol and drug use, a series of questions were included in the SNMHS about attitudes toward alcohol use. The questions were adapted from several studies and scales, including the "Monitoring the Future" study (University of Michigan, 2014) and the attitudes toward smoking test study (U.S. Public Health Service, 1974). A few other items that apply to the Saudi culture were also added to this section, such as the question "Do you think that people who drink tend to be generally more criminal than average?"

2.5 | Marriage

The standard CIDI marriage section does not have a provision for polygamy. Questions on polygamous marriage and attitude toward polygamy were consequently added to the marriage section. An example of these questions: Indicate how much you agree or disagree with the statement "Wives of a polygamous marriage are usually treated equally."

2.6 | Religiosity

Given the centrality of religion to Saudi life, it was felt that a more in-depth assessment of religiosity was needed in the SNMHS than exists in the standard CIDI. To that end, religiosity was assessed using the Scale of Islamic Religiosity Attitude (Marwa, 2010). This scale has been shown in previous research to have excellent reliability (α = .93) and validity when compared to an independent gold standard (p < .001). The scale assesses aspects of religiosity in terms of worshipping, Islamic interests, Islamic behaviors, and beliefs. The first three aspects are measured on a degree of frequency scale with response categories *always*, *mostly*, *occasionally*, *rarely*, and *never*. Beliefs are measured as *very strong/strong/middle/weak/nothing*. Examples of statements of the scale include: "I perform prayer on its prescribed time," "I help poor and needy people," "I violate or ignore other people's rights," and "My belief in the message of Prophet Mohammed."

3 | DNA

To study genetic risk factors for mental disorders, saliva samples were collected from all SNMHS respondents for purposes of genetic analysis, using standard protocols in the labs of the Genetics Department at King Faisal Specialist Hospital and Research Centre, Riyadh. The DNA extracts were prepared from these samples after the completion of data collection phase and are stored in the labs at −20°C for future analyses.

4 | FIELD PROCEDURES

4.1 | Instrument adaptation

The TRAPD (translation, review, adjudication, pretesting, and documentation) model (Harkness et al., 2008; Harkness, Villar, & Edwards,

2010) was used to modify the CIDI for the SNMHS. The first step in this process was to translate the original instrument from English to Modern Standard Arabic. Details of this translation process are discussed elsewhere (Shahab et al., 2019). Pretests involving cognitive interviewing and pilot studies then led to translation revisions. Further cognitive interviewing confirmed that Saudi citizens had a good understanding of the meaning of questions in the instrument where initial concerns were raised about comprehension. Details of the pretesting components of the adaptation have been reported elsewhere (Mneimneh et al., 2018; Shahab et al., 2017).

4.2 | Survey mode

Given the complexity and length of the instrument, the revised CIDI was administered using a computer-assisted personal interview (CAPI) mode by interviewers equipped with laptops (Couper & Hansen, 2001). An audio computer-assisted self-interviewing (ACASI) method was used for specific sensitive sections (e.g., suicidality) based on evidence that this approach leads to increased reports of sensitive attitudes, feelings, and behaviors (Couper, Singer, & Tourangeau, 2003). In the ACASI component of the survey, respondents were given a headphone to listen to a gender-matched recorded voice of the questions, while they read the questions on a computer screen (Caspar, 2008). The respondents then entered their answers directly into the computer. Respondents who had difficulty using ACASI could switch to full CAPI mode.

4.3 | Field-staff recruitment and training

The survey interviewers were required to be high school graduates with good communication skills, posess the ability to have flexible work schedules, and pass a test of ability to work with the CAPI system used in data collection prior to beginning training. In addition to administering the interview, interviewers needed to implement all aspects of the respondent selection procedures, attain a high respondent cooperation rate, and complete related administration tasks.

CIDI trainers need to complete a training program offered by the WHO CIDI Training and Research Center at the University of Michigan. Trainees who successfully complete the certification process at the end of the training program are then given access to all CIDI training materials for use in training interviewers and supervisors. This 6-day train-the-trainer program was carried out for the SNMHS at the University of Michigan, Ann Arbor. The KSA trainers who completed this program then hired and trained a team of supervisors in regional parts of KSA on the CIDI, interviewer recruitment, and field quality control monitoring.

Based on the training sessions for the pilot study, a few modifications were made to the training sessions for the main survey and the duration of the overall training (instrument and field procedures) was extended to 10 days. The SNMHS central team trainers conducted a total of seven supervisor and interviewer training courses in different regions of Saudi Arabia. The interviewer training sessions covered general interviewing techniques, CIDI-specific training and fieldwork training, which included a presentation on how to find and approach sample houses. In addition, the trainees received special training on computer hardware and software use, including the use of CAPI questionnaire administration and sample management system. All sessions were conducted in person, and all interviewers were provided with a comprehensive study manual, translated in Arabic. The Saudi supervisors also developed manuals discussing interviewer protocols and related fieldwork instructions. Extra sessions were given to trainees who needed additional help and practice in using the management system and CIDI 3.0-specific conventions and rules. Finally, all interviewers were required to pass a certification test before being approved for fieldwork. Refresher training sessions were conducted after specified time intervals during the fieldwork phase.

4.4 | Data collection

Interviews were conducted in the homes of the participants by the trained and certified interviewers. Each team consisted of a male, female, and a driver. Interviews were gender matched (a male interviewer interviewed a male respondent, while a female interviewer interviewed a female respondent). Interviewing began by having the interviewer team contact each sampled household, introduce the study to a household member serving as the "informant" for the household, and then obtain information from the informant about all noninstitutionalized, ambulatory Arabic-speaking Saudi nationals between the ages of 15 and 65 living in the household. As described above in the section on the instrument, the informant was then asked a series of basic questions about the extent to which these potential survey respondents had impairments that would make it difficult or impossible for them to be a survey respondent. One eligible male and one eligible female were then randomly selected from the household listing as the respondents after excluding household members designated as ineligible because of problems with health or cognition. The selected respondents were then invited to complete the interview for the SNMHS.

Three attempts were made to contact each sampled household face-to-face and then by telephone to obtain a household listing. If no contact was made by that time, a letter was left at the household explaining the study and encouraging cooperation by having a household member contact the central office of the study either to provide the household listing over the telephone or to set up an appointment for the listing to be completed face-to-face. Once the listing was complete, up to 10 attempts were made to contact each designated respondent and complete an interview. In cases where in-person contact was made with the informant and the designated respondent was not at home, materials were left with the informant to be provided to the designated respondent about the study. These materials were mailed when listing was carried out over the telephone. Once the designated respondent was contacted and study purposes and procedures were described in detail, the designated respondent was given a

chance to ask questions, and informed consent was obtained using procedures established by the Institutional Review Board overseeing the study. Informed consent was required from each respondent prior to the start of the interview.

In situations where the household or designated respondent did not agree to participate, a standardized letter that was customized to the reasons provided by the designated informant or respondent (e.g., "too busy," "not interested," unsure of "privacy," or "generally refusing to participate") was sent to convince them otherwise by restating certain facts: they had been chosen at random, their answers will be kept confidential, and if they did not participate it would affect the representativeness of the study's findings. Gift coupons were also offered as incentives for participation. No substitutions were made, meaning that if the informant or the designated respondent refused to participate or no contact was made with them, then the case was considered as nonresponse.

4.5 | Field quality control procedures

The SNMHS involved large field data collection efforts that required close management of field staff to meet the study goals while maintaining the highest quality control standards. The wide geographic dispersion of the sample and the need for interviewers to travel in teams posed special logistical challenges. A related issue is that the interview was quite long, averaging about two hours to complete, which is comparable to the duration it takes to administer in most general population samples (Kessler & Ustün, 2004), and varying widely in length because of the stem-branch structure in most diagnostic sections. For this reason, we divided the survey instrument into two parts (Kessler, Andrews, Mroczek, Üstün, & Wittchen, 2006). Part I contained all core diagnostic sections and was administered to 100% of respondents. Part II was then administered in a case–control framework to 100% of the Part I respondents that met lifetime criteria for any core disorder plus a probability subsample of other Part I respondents. The Part II interview was constructed in such a way that it could easily be administered by telephone in a second interview session. This was done to deal with the fact that some respondents, especially those who met criteria for several different disorders, had to stop the initial interview before it was complete, and the fact that a long travel time would be needed to return to the household to complete the interview. The interquartile range (25th–75th percentiles) of interview length was 0.8–1.36 hours for Part I and 2.44–4 hours for Part II.

Several supervisory levels were required to manage these complexities. The supervisory structure included a project manager and project coordinators who oversaw the entire data collection procedure. The field managers headed a team of supervisors, who monitored the interviewers' work at the local level. Field supervisors also conducted evaluations for the interviewers on a periodic basis to help supervisors track the interviewers' progress, compare their performance with that of their peers, and identify where they were making errors and advise them accordingly. This close monitoring, in turn, helped improve interviewers' ability, morale, and productivity.

An in-house proprietary sample management system designed by the Survey Research Operations Unit, Survey Research Center, University of Michigan, Ann Arbor, was used to improve survey management and tracking. The program was adapted according to the specifications of the SNMHS by an experienced Saudi programmer after obtaining training from, and in collaboration with, the programmers at the University of Michigan, Survey Research Institute. An in-house proprietary web-reporting tool designed by the Survey Research Operations Unit, Survey Research Center, University of Michigan, Ann Arbor was also used. The web-portal mirrored the sample management system data and included a search option to locate details on a specific case, interviewer, region, and so on. It also included the results of the supervisors' evaluation and other quality control checks conducted on specific interviews. The program also generated field reports, which were updated on a weekly basis giving details about cooperation rates, completion rates, response rate, refusal rates, and length of the interview.

Finally, the Saudi supervisory team in collaboration with the University of Michigan team also developed a tailor-made on-line analytical processing (OLAP) cube, which compiled paradata and substantive data of all the interviews conducted by the survey interviewers and allowed data exploration. The cube displayed summary quality indicators at an interviewer level to evaluate potential deviations from protocols (Üstün, Chatterji, Mechbal, Murray, & Collaborating Groups, 2003). The quality control (QC) staff regularly monitored the indicators to ensure that all indicators with flagged cases were assessed and case details were evaluated. Further details about the QC procedures implemented by the SNMHS can be found elsewhere (Hyder et al., 2017). Based on the collection of the QC procedures results, the QC staff at SNMHS carried out interviewer interventions. Corrective actions included retraining on specific CIDI components, suspending an interviewer, and further verification of completed interviews.

Given that each interviewer was required to upload a report of activities to the sample management system each day, the above data systems could be used to monitor all contact attempt details closely for each of the recruitment and implementation steps described above and to compare a wide range of response features as well as length of each interview and each interview section for each interview and interviewer compared to averages. Supervisors also reached out to a random subsample of respondents after they completed interviews to verify if the interviews were done and to re-administer a small subset of questions to check for potential interviewer falsification. Verification was also carried out in various other instances; for example, when an interviewer had high rates of respondents refusing to give saliva. The rate of verification for main interviews and screeners was 29 and 11.4%, respectively. In addition, 100% of respondents received a thank you letter from the project after the interview that provided a toll-free number to notify the SNMHS helpdesk if the respondent faced any issues with the interview or interviewer that they wanted to discuss. This provided another way of checking on interviewer performance. Further details about the SNMHS fieldwork protocol can be found elsewhere (Shahab et al., 2017).

4.6 | Ethical considerations

The SNMHS study protocols and consent forms were approved by the Institutional Review Board committee at the King Faisal Specialist Hospital and Research Centre, Riyadh. Study procedures conformed to the international standards set by the Declaration of Helsinki. Anonymous identification numbers were included in all computer-assisted interviews. All interview records on the laptop computers were encrypted before being uploaded to the database. These records were maintained by the data management team of the Biostatistics, Epidemiology, and Scientific Computing Department at King Faisal Specialist Hospital and Research Centre, in a linkage file that did not contain study variables. This guaranteed that the staff could not link a particular identified individual with a particular survey response.

5 | CONCLUSION

This article presented an overview of the SNMHS survey instrument and field procedures. The original CIDI was translated and adapted to suit the Saudi population. Household interviews using the Saudi version of the CIDI were conducted according to specific WMH fieldwork protocols that were modified to be appropriate to the special circumstances of KSA. These methods allowed us to gather high-quality data from a national sample of the Saudi population, between the ages 15 and 65. The survey's rich database will allow numerous analyses to be carried out to address a wide range of important policy questions about the mental health of the Saudi population.

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DECLARATION OF INTEREST STATEMENT

The authors declare no conflicts of interest.

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