Assessment of Sleep Health in Iran: A Nationwide Study Protocol

Khosro Sadeghniiat-Haghighi
Sleep Breathing Disorders Research Center, Tehran University of Medical Sciences, Tehran, Iran.

Samaneh Akbarpour
Sleep Breathing Disorders Research Center, Tehran University of Medical Sciences, Tehran, Iran.

Atefeh Behkar
Occupational Sleep Research Center, Baharloo Hospital, Tehran University of Medical Sciences, Tehran, Iran.  https://orcid.org/0000-0003-4583-5688

Rahmatollah Moradzadeh
Department of Epidemiology, School of Health, Arak University of Medical Sciences, Arak, Iran.

Zahra Banafsheh Alemohammad
Sleep Breathing Disorders Research Center, Tehran University of Medical Sciences, Tehran, Iran.

Hamed Amirifard
Iranian Center of Neurological Research, Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran.

Arezu Najafi
najafeeaz@gmail.com
Occupational Sleep Research Center, Baharloo Hospital, Tehran University of Medical Sciences, Tehran, Iran.

Method Article

Keywords: Iran, sleep health, obstructive sleep apnea, prevalence, insomnia, restless legs syndrome

Posted Date: March 8th, 2024

DOI: https://doi.org/10.21203/rs.3.pex-2575/v1

License: © This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License
Abstract

This detailed protocol describes the step-by-step process used in a large-scale study that took place in 7 different provinces of Iran. The study's main goal was to evaluate the state of sleep health and related issues. The protocol employed a systematic approach, including the random selection of provinces, calculation of sample sizes, choosing suitable healthcare centers, and collecting data meticulously using standardized tools. The protocol also involved taking biometric measurements and disseminating relevant information to increase awareness of sleep health, all while ensuring strict quality checks to maintain data accuracy. Despite the challenges brought about by the Corona Virus Disease-2019 (COVID-19) pandemic, the protocol's flexibility allowed for successful data collection in various provinces, providing valuable insights into the sleep health issues of the Iranian population. The project took three years to complete, highlighting the comprehensive nature of the study's implementation and the data collected. This project was funded by the National Institute for Medical Research Development (NIMAD) with the grant number 957726.

Introduction

Reagents

Equipment

Procedure

1. Random Province Selection: A random selection process was used to identify 9 provinces out of the 31 provinces in Iran.

2. Sample Size Calculation: The sample size for each province was determined based on the total population of the respective provinces (see supplemental material).

3. Selection of Health Care Centers (HCCs): Random urban and rural HCCs were chosen within each selected province to achieve the desired sample size.

4. Sample Distribution: 75% of the targeted sample size was obtained from urban HCCs, while the remaining 25% was collected from rural HCCs.

5. Appointment Arrangements: The National Institute of Medical Research Development (NIMAD) facilitated appointments with the vice-chancellors of health in the chosen provinces.

6. Collaboration Establishment: Collaboration was established with a designated contributor appointed by the provincial deputy in each province.
7. **Training of HCC Staff:** Training sessions were conducted by an epidemiologist and a sleep medicine specialist, who traveled to almost every province to educate HCC staff on the study's goals, research instruments, data collection methods, and information about sleep health, sleep disorders, OSA, and available management options.

8. **Household Sampling:** The population of each HCC was sampled using a random selection of recorded household codes in each HCC location. The Occupational Sleep Research Center at Baharloo Hospital in Tehran was responsible for selecting the household codes for HCC clusters.

9. **Participant Engagement:** Trained personnel from health centers and two professional interviewers visited selected households, informing the inhabitants about the study's objectives and inviting their participation.

10. **Participant Selection:** Male and female participants aged 18 years and above, of Iranian nationality, were selected upon their agreement to participate in the study.

11. **Informed Consent:** All participants provided informed consent before their inclusion in the study.

12. **Data Collection:** Participants completed various questionnaires, including demographic information, the Persian version of STOP-BANG [1], the Insomnia Severity Index (ISI) [2], Pittsburgh Sleep Quality Index (PSQI) [3], and IRLSSG questionnaires [4], as well as questions related to sleeping habits and satisfaction.

13. **Biometric Measurements:** Each participant's weight, height, and neck circumference were measured using the same instrument brands.

14. **Information Dissemination:** Upon completion of surveys and measurements for each individual, information on OSA, sleep disorders, and available management options was provided to participants through both oral communication and a visually informative pamphlet containing relevant details (see supplemental material). This information was also provided to those who declined participation.

15. **Continued Sampling:** The sampling process continued, moving from one household to the next until each cluster included 20 individuals, ensuring representation across different age groups and an equal distribution of genders (10 males, 10 females, two in each age group, 18-25, 25-35, 35-45, 45-55, and >55 years old).

16. **Quality Assurance Checks:** Two quality assurance checks were implemented, first by HCC administrators after questionnaire completion and then by the executive manager of the study, to ensure a balanced representation across gender and age groups within each cluster.

17. **Statistical Analysis:** Data analysis was performed using STATA software.

18. **Complex Sample Survey Analysis:** Before any analysis, complex sample survey analyses were conducted to extrapolate the results to the broader Iranian adult population, utilizing weights based on the 2016 national Iranian census, accounting for age, sex, and rural/urban residence.
Troubleshooting

Due to the unprecedented challenges posed by the COVID-19 pandemic, the original plan to conduct sampling in 9 provinces was altered. Difficulties arising from the pandemic led to the inability to carry out the sampling process in the provinces of Khuzestan and Khorasan Razavi. Consequently, the data-collection process was completed in 7 provinces, ensuring a comprehensive representation of diverse geographical regions and demographic characteristics across the Iranian population.

Time Taken

The data-collection phase of this project spanned three years.

Anticipated Results

References


Acknowledgements

We acknowledge vice chancellors of public health deputies at the time of study, Alireza Delavari, Tehran University of Medical Sciences; Shahnam Arshi, Shahid Beheshti University of Medical Sciences; Mohsen Aarabi, Mazandaran University of Medical Sciences; Rasool Entezarmahdi, Urmia University of Medical Sciences; Manoochehr Karami, Hamadan University of Medical Sciences; Seyyed Vahid Ahmadi Tabatabayi, Kerman University of Medical Sciences; Gholamali Javdan, Hormozgan University of Medical Sciences; Mohsen Moghadami, Shiraz University of Medical Sciences; Mohammad Mohsen Lotfi, Yazd Shahid Sadoughi University of Medical Sciences; Reza Malekzadeh, head of the National Institute for Medical Research Development (NIMAD); Vahid Malekinejad, faculty member of the University of California San Francisco (UCSF); Iraj Mohebbi, faculty member of Urmia University of Medical Sciences; Amir Houshang Mehrparvar, faculty member of the Yazd Shahid Sadoughi University of Medical Sciences; Ayeh Shams Al Dini, faculty member of Kerman University of Medical Sciences; Ali Mouseli,
faculty member of Hormozgan University of Medical Sciences, and Nazanin Forouzan, faculty member of Tehran University of Medical Sciences.

We would also like to thank the staff members of the Tehran University of Medical Sciences’ deputy of public health (Zahra Begum Seyyed Aghamiri, supervisor, Masoumeh Adris, Maryam Shabanlou, Maryam Abdoli, Zahra Kazemi Asfa, Azita Ajlali, Azam Anami Iraqi, Shabnam Shirandami, Halimeh Hanafi, and Marziee Sarabi); Shahid Beheshti University of Medical Sciences’ deputy of public health (Zahra Karami, supervisor, Fatemeh Pourhaji, Nasrin Jafarnia, Parvaneh Mousavi, Shahla Ghanbari, Reza Ahmadi, Reza Nourozi, Fatemeh Parimi, Hajar Rezaee, Marzieh Siampour Nayini, and Mahshad Mahdihar); Iran University of Medical Sciences’ deputy of public health (Samaneh Akhavan Malayeri, supervisor, Elham Rakhshi, Nahid Safari, Azadeh Peivandi, Maryam Ghareh Osman, and Afsaneh Ashori); Kerman University of Medical Sciences’ deputy of public health (Maryam Hosseinpour, supervisor, Akram Khalili Mahani, Fatemeh Nobar, Mahbobeh Sadat Miri, and Shahla Ataollahi); Urmia University of Medical Sciences’ deputy of public health (Fahimah Zehtabi Azar, supervisor, Jebril Nasirian, Mohammad Rostamlo, Solmaz Taghizadeh, Raziee Moazen, Parisa Mashmol, and Somayeh Rasouli); Hormozgan University of Medical Sciences’ deputy of public health (Roya Atehad, supervisor, Zahra Ahmadi, Fateme Hosseini, Hamid Reza Mirjalili, Sakineh Razamand, and Somayeh Samiee); Shiraz University of Medical Sciences’ deputy of public health (Neda Hadizadeh, supervisor, Zahra Taghipour, Mohammad Ali Moghimizadeh, Sahar Derakhshani, Ali Jafarian, Hessam Parvizi Emran, and Fariba Moradi Ardakani); Hamedan University of Medical Sciences’ deputy of public health (Razia Sadat Mir Moini, supervisor, Zahra Jalali, Saideh Zulfaghari, Rahime Rahbari Pasand, Khadijeh Gorgian, Mojtaba Zarei, and Nasser Fayazee); Yazd Shahid Sadoughi University of Medical Sciences’ deputy of public health (Behnam Bagheri Fahrji, supervisor, Hamid Reza Mirjalili, Leila Mirjalili, and Najma Sadat Haraji); Mazandaran University of Medical Sciences’ deputy of public health (Mohammad Reza Parsai, supervisor, Ali Akbar Ramezani, Reza Dosti, and Alireza Abbaspour); Occupational Sleep Research Center, Baharloo Hospital, Tehran University of Medical Sciences (Somayeh Ghodrati Asgharabadi, Parvin Shibli, Ghazal Dibai, Samane Delkash, Pariya Fallah, Mohammad Reza Mansouri, Ania Rahimi-Golkhandan, Amin Nakhostin-Ansari, Faezeh Aghajani, and Mohammad Alirezaei), and National Institute for Medical Research Development (Bita Mesgarpur, and Farzad Fatehi) for collaborating with us.

Our special thanks go to Dr. Mike Mutschelknaus, International Sleep Research Training Program (ISRTP) program coordinator, World Sleep Society, for his edits on this manuscript.

**Supplementary Files**

This is a list of supplementary files associated with this preprint. Click to download.

- Clusterregistrationform.pdf
- Clusterselectionform.pdf
- Facilitatorsguide.pdf