

Letter to Editor

Sleep Disordered Breathing in Pakistani population

I read with interest the article by Haqgee et al on a hospital based preliminary report on Sleep Disordered Breathing in Pakistani population published in **J Ayub Med Coll Abbottabad 2002;14 (3) :2-4.**

Though a very interesting and informative study, this writer also notes that the nature of the studied sample should be clearly stated. A part of the statements in the abstract section describes "... a total of 123 subjects ----", while in the Material and Methods section states that 'consecutive patients attending AKUH for an executive medical check-up during the months of August and October 1998 were surveyed for their sleeping habits. All the patients completed a sleep questionnaire. ----'

If the study is based on 123 subjects in that particular period of time for 'executive medical check up', then actually it is not for any 'patients'. The definition of 'executive' needs to be specified. It seems to suggest that this is intended to be a descriptive study generalizable to another specific population. The data are clearly not suited to that purpose. Therefore it is not a good sampling of the Pakistani population as stated on the title.

Regarding the section of 'Material and Methods', there are some questions. How were the patients selected? What was the process by which patients ended up in an 'executive medical check up' in the hospital? All these questions deserve clearer answers.

As noted in the paragraph on statistics in the section of Material and Methods: 'Statistical analysis was by chi square test, t-test and Fisher's exact test. A p-value less than 0.05 was considered significant.' the main analysis seems to be an estimation of prevalence of snoring and sleep disordered breathing and the cross-tabulation of these two conditions in a specific 'executive medical check -up' clinic of that specific hospital-based population. But what does this mean and how does this scientifically generalize to any other population, such as what has been stated in the title of this article, namely "Pakistani population", especially when the non-executive portion of the population with different age groups are considered?

As to the section of the "Result" and "discussion" of this article, certainly just as the authors state that the reported prevalence of sleep disordered breathing (SDB) varies in different communities,¹⁻³ these discrepancies have largely been ascribed to the methodological difficulties in characterizing these syndromes in large populations.⁴

This article is the first preliminary report that has evaluated the prevalence of sleep disordered breathing in the subjects in a specific population, who attended the AFUH clinic for executive medical check-up for that particular period of time. The prevalence of snoring, snoring with apnea, and snoring with apnea and excessive daytime sleepiness (EDS) are found "very similar to those of Western studies that show a prevalence of OSA as 9% for women and 24% for men----"¹, reported by Young et al. It is worthwhile to note that the one reported by Young, T. et al is from University of Wisconsin, School of Medicine, Madison, Wisconsin, U S is using data from the Wisconsin Sleep Cohort Study. It is a longitudinal study of the natural history of cardiopulmonary disorders of sleep, which were applied to estimate the prevalence of undiagnosed sleep-disordered breathing among adults and address its importance to the public health. The study was from a random sample of 602 employed (including but not limited to executive) men and women 30 to 60 years old who were studied by overnight polysomno-graphy to determine the frequency of episodes of apnea and hypopnea per hour of sleep (the apnea-hypopnea score). Before one can really make a comparison between Young, T. et al's report with that of this (Haqgee et al's) study, one should take into consideration that the former is a randomized sample, with the size of sample almost 5 times larger than that of the latter (Haqgee et al's study).

There are about 12 major prevalence studies of obstructive sleep aponea (OSA)⁵ at the time when this study was published. Most of them used a sleep questionnaire followed by an evaluation of sleep disordered breathing by overnight polysomnography or oximetry. The authors of this study have already humbly raised a critique for their own methodology, which would state two important issues, firstly, they used only the questionnaire and secondly, most published studies are drawn from large populations, whereas this study used only their own executive 'patients' as a sample of their own population. In addition, this writer raises a third issue of the importance of randomization of sample, as the randomized controlled trial is the strongest research design for evaluating net effect of intervention, knowing that there are limitations for randomized trial such as coverage for medical payment, time and cost.⁶

With respect to the study according to Lugaesi et al's report, which was published in 1980, snoring has been a common phenomenon seen in about 20% of the adult population, and in about 60% of men over 40 years of age⁷. In this (Haqquee et al's) study, snoring was reported in 46% of the sample population of 123 subjects and tended to increase with advancing age. It is worthwhile to note that in this study that the mean of ages for the snorers is 46.6 ± 10.5 , while that for non-snorers is 40 ± 12.4 years old.

As a contrast, hypertension has been associated with obstructive sleep apnea (OSA) in large population based studies,⁸ such as what was reported by Hla et al. Since this association is independent of age, therefore the means of ages, which are noted in this study, should not make any much discrepancy.

As noted in the section on Material and Methods, in this study statistical analysis was by Chi square test, t-test and Fisher's Exact Test. Among these tests, t-test is the simplistic one. With respect to Fisher's Exact Test, it is a procedure that one can use for data in a two by two contingency table. It is an alternative to the Chi-square test in this study, since the total number of subject is 123, which does not require Yates correction.

The Chi-square test relies on a large sample approximation. Therefore, one may prefer to use Fisher's Exact Test in situations where a large sample approximation is inappropriate.

There is really no lower limit on the amount of data that is needed for Fisher's Exact Test. One does have to have at least one data value in each row and one data value in each column. If an entire row or column is zero, then one does not really have any 2 by 2 table, which is not the situation in this study. On the other hand, Fisher's Exact Test is also very useful for highly imbalanced tables. If one or two of the cells in a two by two table have numbers in the thousands (which certainly is not the situation in this study either), and one or two of the other cells has numbers less than 5, one can still use Fisher's Exact Test.

Once decision has been made to use Fisher Exact Test, such as in this study, whether a one or two tailed version may misrepresent the statistical significance of data. A uniform specification statement should be required in order to prevent such a potential errors in interpretation.⁹⁻¹² Unfortunately, it appears that there is no such a statement found in the report of this study.

In summary, allow this writer taking the liberty to congratulate the authors for their find quality of effort in preparing this preliminary study, and certainly also looks forward to reading their final study with inclusion of a more objective evaluation of subjects' symptoms and signs, an expansion to a larger sample size without selection of subjects' occupations and ages from the population¹³, and a specific statement of whether one- or two-tailed version when Fisher Exact Test is contemplated.

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REFERENCES

1. Young T, Palta M, Dempsey J, Skatrud J, Weber S, Badr S. The occurrence of sleep disordered breathing among middle-aged adults. *N Engl J Med* 1993; 328:1230-5.
2. Mary SM, Lam B, Lauder IJ, Tsang KWT, Chung K, Mok Y, Lam W. A community study of Sleep Disordered Breathing in Middle-aged Chinese Men in Hong Kong. *Chest* 2001; 119(1): 62-69.
3. Ng TP, Seow A, Tan WC. Prevalence of snoring and sleep related- breathing disorders in Chinese, Malay and Indian adults in Singapore. *Eur Respir J* 1998; 12:198-202.
4. Lindberg E, Gislason T. Clinical Review Article: Epidemiology of sleep-related obstructive breathing. *Sleep Med Rev* 2000;4(5): 411-33.
5. Davies RJO, Stradling JR. The epidemiology of sleep apnea. *Thorax* 1996;51: (suppl 2): s65-s70.

6. Rossi, Freeman. Evaluation. Fifth Edition. Newbury Park, California: Sage Publications.(1996)(ISBN 0-8039-4458-6)
7. Lugaesi E, Cirignotta F, Coccagna G, Piana C. Some epidemiological data on snoring and cardiocirculatory disturbances. Sleep 1980; 3:221-24.
8. Hla KM, Young TB, Bidwell T, Palta M, Skatrud JB, Dempsey J.Sleep apnea and hypertension. A population based study. Ann Intern Med 1994;120:382-8.
9. Josphe L. Fleiss. Statistical Methods for Rates and Proportions. Second Edition. New York NY: John Wiley and Sons, Inc. (1981) (ISBN: 0-471-06428-9).
10. McKinney WP, Young MJ, Hartz A, Lee MB. The inexact use of Fisher's Exact Test in six major medical journals Jama 1989; 261(23); 3430-3
11. Brett J. Cassens. Preventive Medicine and Public Health. Second Edition. Philadelphia, PA: Harwal Publishing, (1992) (ISBN:0-683-06262-x)
12. David Knoke, George W. Bohrnstedt. Statistics for Social Data Analysis. Third Edition. Itasca, Illinois: F.E. Peacock Publishers, Inc. (1994) (ISBN: 0-87581-381-X)
13. Hulley, Cummings. Designing Clinical Research. Baltimore, MD: Williams & Wilkins (1997) (ISBN: 0-683-04249-1)

RESPONSE OF AUTHOR

- An executive referred to men/women which were sent for annual complete routine medical check up to AKUH from their respective Organisations. These were normal/healthy individuals of the community and hence represented an appropriate sample for a preliminary report. Selection was on a voluntary basis. We agree that a more appropriate word should have been 'participant' rather than 'patient'.
- We have already pointed out in our discussion that this was a limited sample which aimed at defining the magnitude of SDB in Pakistani population and this needs to be expanded to include a bigger sample size. We are currently looking at a much larger sample to further our preliminary report.
- We merely said that our preliminary data showed similar trends of SDB as of Western population and no comparisons were made.
- We must remember that it is a questionnaire based data and lacks the objective evaluation to corroborate the statements entered on the questionnaire and may actually be an underestimate of both snoring as well as apnoea.
- We note the valuable comments made by Dr Bing regarding the analytical methods.

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