Assessment of metabolic syndrome and health related quality of life in community dwellers: A cross sectional study from North India

Rambha Pathak[a,*], Rashmi Agarwalla[a], Deepak Pathania[b]

[a] Department of Community Medicine, Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, New Delhi, India
[b] Department of Family and Community Medicine, Prince Sattam Bin Abdulaziz University, Al kharj, Saudi Arabia

ARTICLE INFO

ABSTRACT

Introduction: Metabolic syndrome is a widely prevalent multifactorial disorder. Its effect on quality of life remains a matter of concern.
Objectives: To find the effect of metabolic syndrome on the quality of life of community dwelling adults in rural Haryana.
Materials and methodology: This cross sectional study was conducted in rural population of district Ambala, Haryana.1200 individuals above the age of 20 years were selected by Multi stage cluster sampling from the six blocks of Ambala. The new clinical definition of the metabolic syndrome given by International Diabetes Federation was used to define metabolic syndrome. Quality of life was assessed by Short form survey (SF)-36 questionnaire.
Results: A total of 110 (9.2%) subjects out of 1200 were found to be having metabolic syndrome. 92.7% of the participants in the metabolic syndrome group were having Sf −36 scores between 0 and 50. Physical and mental scores of patients suffering from metabolic syndrome were significantly lower than non-metabolic syndrome group. Health related quality of life was found to be lowered in obese individuals.
Discussion and conclusion: Metabolic syndrome is a significant public health problem and health care workers can target community dwellers with obesity in the community to improve health related quality of life.

1. Introduction

Metabolic syndrome (MetS) is a major and escalating public-health and clinical challenge worldwide in the wake of urbanization, surplus energy intake, increasing obesity, and sedentary life habits. Metabolic syndrome is defined by a constellation of interconnected physiological, biochemical, clinical, and metabolic factors that directly increases the risk of cardiovascular disease, type 2 diabetes mellitus, and all cause mortality [1]. It is increasingly attracting the attention of research institutions and scientific societies, as a major modifiable determinant of cardiovascular disease and Type 2 diabetes [2–4]. Premature deaths and morbidity from effects of metabolic syndrome are rising at an astonishingly fast rate, burdening the health care providers and causing serious implications for economic growth. In recent years lot of work is being done on metabolic syndrome but there is lack of data on the impact of the same on the patient's life, especially in developing countries. Today, subjective well-being has become a part of health outcome evaluation in studies and clinical practice. Quality of life (QoL) is one of the important health outcome concepts that are expressed subjectively by patients. It considers all health dimensions; physical, mental and socioeconomic [5].

Studies from India have shown the individual effect of obesity, diabetes, and dyslipidemia on quality of life [6–9]. However there are lack of studies encompassing all components of metabolic syndrome such as glucose intolerance, obesity, raised blood pressure and dyslipidemia and assessing their impact on quality of life of patients. Hence the present study was undertaken to find the effect of metabolic syndrome on the quality of life of community dwelling adults in rural Haryana.

2. Methodology

2.1. Study area

The study was conducted in rural population of district Ambala, Haryana. As per census 2011, district Ambala has 6 blocks, this

* Corresponding author at: Department of Community Medicine, Hamdard Institute of Medical Sciences and Research, Jamia Hamdard, Hamdard Nagar, 110062, India.
E-mail address: rambha_p@yahoo.com (R. Pathak).

study was conducted in block Barara which was randomly selected out of 6 blocks.

2.2. Study population

The study was conducted in both males and females of block Barara in the age group of 20 years and above. All individuals more than or equal to 20 years of age were selected. Pregnant women and those participants who were not willing or in position to give information due to any reason were excluded.

2.3. Study period

The study was carried out over a period of one and a half year i.e. from January 2012 to June 2013.During this period, finalization of study tool, field survey, data collection, data analysis and interpretation was done.

2.4. Study design

A community based cross-sectional design was adopted for studying the prevalence of metabolic syndrome and its effect on quality of life among individuals aged 20 years and above in the study area.

2.5. Sample size

The sample size was calculated by Literature review which revealed that the prevalence rate of metabolic syndrome in India is in the range of 18% (Deepa et al. [10]) to 34% (Kanjilal et al. [11]). As the data on prevalence rate of metabolic syndrome for Haryana state is not available, the sample size was calculated by presuming the prevalence of metabolic syndrome to be 26% (mean reported prevalence in India) with 10% error the sample size for the study came out to be 1138. To compensate for the non response we conducted survey in 1200 individuals.

2.6. Sampling technique

Multi stage cluster sampling technique was employed to draw the required sample size. In the first stage, out of six blocks of the district Ambala, one block namely Barara was selected by simple random sampling. Further in the second stage, cluster sampling method was adopted and villages were taken as primary sampling unit. 15 clusters of 80 respondents each were taken. All the 75 villages of the block Barara were listed in a column along with its population in the next column and the cumulative population was worked out. In the third stage, after the selection of the villages, the next step was to select the households within these selected villages. For selection of the participant household with eligible participants were searched for, from northeast direction of the village and counted in clockwise direction till 80 eligible participants who satisfied the inclusion criteria and agreed to participate in the study were completed in each cluster.

2.7. Study tools

The new clinical definition of the metabolic syndrome given by International Diabetes Federation [12] was used to define metabolic syndrome. It requires the presence of the following: Central obesity as defined by (waist circumference $\geq$ 90 cm in men and $\geq$ 80 cm in women); Plus any two of the following four factors:

I Raised Triglycerides level: $\geq$ 150 mg/dl (1.7 m mol/L) or taking any specific treatment for this lipid abnormality

II Reduced HDL Cholesterol: $<$40 mg/dl (1.03 m mol/L) in males and $<$50 mg/dl(1.29 mmol/L) in females or specific treatment for this lipid abnormality
III Raised Blood Pressure: systolic BP $\geq$ 130 or diastolic BP $\geq$ 85 mm Hg or treatment for previously diagnosed hypertension
IV Raised Fasting Plasma Glucose (FPG) $\geq$ 100 mg/dl (5.6 m mol/L) or previously diagnosed type 2 diabetes

2.8. Proforma for assessing quality of life: SF-36 questionnaire

The SF-36 is a multi-purpose, short-form health survey with only 36 questions [13]. It takes into consideration eight domains of quality of life i.e. physical functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well being, social functioning, pain and general health. All questions were scored on a scale from 0 to 100 with 100 representing the highest level of functioning possible. Aggregate scores were compiled as a percentage of the total points possible, using the RAND scoring table [14]. The scores from those questions that address each specific area of functional health status were then averaged together, for a final score within each of the 8 dimensions measured (e.g. pain, physical functioning etc.).

2.9. Blood pressure

The auscultatory method of blood pressure monitoring with a properly calibrated and validated instrument (Diamond Super Deluxe: BPMR 130, Indiamart) was used. After 5 min rest, three readings of blood pressure were taken with a gap of 2 min between them and a mean of the three was taken as the final reading.

2.10. Lipid profile

An overnight fast blood sample (10 ml) was collected. The fasting blood sugar was analyzed by glucose oxidase peroxidase (GOP-PAP) method [15]; total cholesterol was analyzed by cholesterol oxidase- phenol + aminophenazone (CHOD-PAP) method [16], triglycerides by glycerol-3-phosphate oxidase- phenol + aminophenazone(GPO-PAP) Trinder method [17] and high-density lipoprotein cholesterol (HDL-C) by phosphotugstic acid method [18]. ERBA kits supplied by Transia Biochemicals Ltd., Mumbai, were used.

2.11. Strategy

The eligible population was contacted twice for data collection. In the first visit, information about risk factors was taken by interview technique followed by general physical examination. In case the central obesity was found to be more than the prescribed guidelines by International Diabetes Federation, the participants were asked for their fasting blood samples. They were asked to remain on fasting for 12 h prior to blood sample collection. Informed and written consent was taken from participants before taking interview, general physical examination and collecting blood samples. Only those who were willing to participate were included in the study.

Ethical clearance was obtained from the ethics review committee of the institute before conducting the study.

2.12. Statistical analysis

Data has been compiled and analyzed using SPSS17.0 (SPSS Inc, Chicago, IL). Data has been presented as mean ± standard deviation for continuous variables and as frequencies for categorical