



Research Article

Knowledge Regarding Lifestyle Modification for Prevention of Obesity Among Adults in a Selected Urban Areas of Kanpur: A Descriptive Cross-Sectional Study

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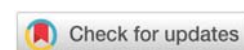
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Abstract

Background: Obesity is a significant public health concern and a modifiable risk factor for a number of noncommunicable diseases. Obesity has becoming increasingly prevalent worldwide, with nearly 2.5 billion persons classed as overweight and 890 million obese by 2022.¹ In India, nationally representative data show a high prevalence of generalized and abdominal obesity, with metabolic noncommunicable diseases being more common in urban populations. Lifestyle factors such as bad eating habits, lack of physical activity, and sedentary behavior significantly increase the risk of obesity.³ Knowledge on healthy lifestyle changes is thus a crucial component of obesity prevention.

Objectives: To assess the knowledge regarding lifestyle modification for prevention of obesity among adults in a selected urban area of Kanpur and to determine the association between knowledge level and selected demographic variables.

Methods: A quantitative, non-experimental descriptive cross-sectional study was conducted among 60 adults residing in the selected urban area of MIG Block, Panki, Kanpur. Participants were selected using non-probability purposive sampling. Data were collected using a structured questionnaire consisting of demographic characteristics and 30 multiple-choice questions assessing knowledge regarding lifestyle modification for obesity prevention. Descriptive statistics were used to summarize participant characteristics and knowledge levels. The association between the predefined categorical knowledge level and selected categorical demographic variables was assessed using Pearson's chi-square test or exact tests, as appropriate, with statistical significance considered at a two-sided $P < 0.05$.

Results: The total knowledge score ranged from 11 to 27, with a mean score of 21.60 ± 3.78 and a median of 22.5 (IQR: 19–24); the Shapiro–Wilk test indicated a statistically significant departure from normality ($W = 0.935$, $P = 0.003$). Among the 60 participants, 45 (75.0%) were aged 25–44 years and 43 (71.7%) were male. Twenty-seven (45.0%) participants were graduates, 24 (40.0%) were self-employed, and 40 (66.7%) followed a vegetarian diet. Thirty (50.0%) participants reported being physically active, while 45 (75.0%) had previous knowledge regarding lifestyle modification for obesity prevention. Regarding overall knowledge, 30 (50.0%) participants had adequate knowledge, 24 (40.0%) had moderately adequate knowledge and 6 (10.0%) had inadequate knowledge. Previous knowledge regarding obesity prevention was reported to have a statistically significant association with knowledge level, whereas the reported associations with age, gender, educational status, occupation, family income, type of diet and physical activity were not statistically significant.

Conclusion: The findings show that although most participants demonstrated adequate or moderately adequate knowledge regarding lifestyle modification for obesity prevention, a proportion had inadequate knowledge. Previous knowledge regarding obesity prevention was significantly associated with knowledge level in this sample. Strengthening community-based health education, counselling and preventive health-promotion activities may help improve awareness regarding healthy dietary practices, physical activity and other lifestyle measures for obesity prevention.

Introduction

Obesity is a complex chronic disease and an increasingly important public health problem worldwide. It is associated with an increased risk of type 2 diabetes mellitus, cardiovascular disease, musculoskeletal disorders and several other chronic health conditions. The World Health Organization (WHO) defines overweight in adults as a body mass index (BMI) of ≥ 25 kg/m² and obesity as a BMI of ≥ 30 kg/m² [1,2]. In 2022, approximately 2.5 billion adults worldwide were overweight, including about 890 million adults living with obesity [1]. The substantial increase in obesity over recent decades reflects changes in dietary patterns, physical activity, sedentary behaviour and the broader social and environmental determinants of health [1].

India is experiencing a substantial burden of obesity alongside other non-communicable diseases. The ICMR-INDIAB national cross-sectional study involving 113,043 individuals reported a prevalence of generalised obesity of 28.6% and abdominal obesity of 39.5%. The study further reported that most metabolic non-communicable diseases, including obesity, were more frequent in urban than rural populations [2]. These findings highlight the importance of preventive strategies directed towards urban communities.

The urban environment may facilitate lifestyle patterns associated with weight gain, including reduced physical activity, sedentary occupations, increased consumption of energy-dense foods and limited opportunities for regular exercise. Evidence from a population-based study conducted in Kanpur district demonstrated that obesity was more prevalent among urban residents and that increasing physical activity was associated with a lower prevalence of obesity [3]. These findings provide a local rationale for focusing preventive health promotion efforts on urban adults.

Lifestyle modification is an important component of obesity prevention. Healthy dietary practices and appropriate portion control are important components of healthy nutritional behaviour, while regular physical activity and reduction of sedentary behaviour can contribute to maintaining a healthy body weight and reducing cardiometabolic risk [4-6]. Evidence from systematic reviews indicates that combined dietary and physical activity interventions can produce beneficial effects on body weight, body mass index, waist circumference and other health outcomes among adults [4,5]. Furthermore, interventions aimed at preventing weight gain in adults have demonstrated modest but significant reductions in weight gain compared with control conditions [7].

Knowledge is an important prerequisite for informed health behaviour, although knowledge alone does not necessarily result in sustained behavioural change [8]. A systematic review of health literacy and obesity found evidence of an association between health literacy and obesity-related outcomes among adults, suggesting that the ability to obtain, understand and use health information may have an important role in obesity prevention [9]. Community-based research has also demonstrated gaps in knowledge related to overweight, obesity and physical activity among adults [10].

Nurses and other primary healthcare professionals have an important role in health promotion through individual counselling, community education, risk identification and reinforcement of healthy lifestyle practices. Nutrition and physical activity interventions delivered by health professionals have been shown to improve several lifestyle-related outcomes and support weight-management goals [11]. Therefore, assessing the existing knowledge of adults can help identify educational needs and guide community-based health promotion interventions.

Although obesity is an important emerging health concern in India, limited community-level information is available regarding adults' knowledge specifically related to lifestyle modification for obesity prevention in selected urban areas of Kanpur. Assessment of knowledge can provide a basis for planning targeted health education and preventive interventions.

Therefore, the present study was undertaken to assess knowledge regarding lifestyle modification for prevention of obesity among adults in a selected urban area of Kanpur and to determine the association between knowledge level and selected demographic variables.

Materials and methods

Study design

A quantitative, non-experimental descriptive cross-sectional research design was adopted to assess knowledge regarding lifestyle modification for the prevention of obesity among adults in a selected urban area of Kanpur, Uttar Pradesh, India.

Study setting

The study was conducted in the Middle-Income Group (MIG) Block located in the Panki area of Kanpur, Uttar Pradesh. The setting was selected as it represented an accessible urban community in which adults from different sociodemographic backgrounds could be recruited for assessment of knowledge regarding obesity prevention.

Study population and participants

The target population comprised adults residing in the selected urban area of Kanpur. The accessible population included adults residing in the MIG Block, Panki, who fulfilled the eligibility criteria during the period of data collection.

A total of 60 adults participated in the study.

Sampling technique and sample size

A sample of 60 adults was selected using a non-probability purposive sampling technique. Participants residing in the selected MIG Block, Panki, who met the eligibility criteria and were available during the data-collection period were approached by the investigator. Eligible participants were informed about the study, and those who voluntarily agreed to participate and provided written informed consent were

included. Recruitment continued until the required sample size of 60 participants was obtained.

Eligibility criteria

Inclusion Criteria

Adults were eligible to participate if they:

1. Were residents of the selected MIG Block, Panki, Kanpur.
2. Were available during the period of data collection.
3. Were able to understand Hindi or English.
4. Were willing to participate in the study.
5. Provided informed consent.

Exclusion Criteria

1. Adults were excluded if they:
2. Were unwilling to participate in the study.
3. Were seriously ill at the time of data collection.
4. Were unable to communicate or understand Hindi or English.
5. Had a condition that substantially impaired their ability to respond to the questionnaire.
6. Were healthcare professionals or students with specialised knowledge that could substantially influence the assessment.
7. Were pregnant women.

Study variables

The dependent variable was the knowledge regarding lifestyle modification for the prevention of obesity.

Selected demographic characteristics, including age, gender, educational status, occupation, monthly family income, type of diet, physical activity and previous knowledge regarding obesity prevention, were considered as participant characteristics for analysis of their association with knowledge level.

Data collection instrument

Data were collected using a structured questionnaire developed by the investigator following a review of relevant literature and available evidence regarding obesity, healthy dietary practices, physical activity and lifestyle modification.

The questionnaire consisted of two sections:

Section A: Demographic characteristics

This section collected information regarding age, gender, educational status, occupation, monthly family income, type of diet, physical activity and previous knowledge regarding lifestyle modification for obesity prevention.

Section B: Knowledge questionnaire

This section consisted of 30 multiple-choice questions assessing knowledge regarding lifestyle modification for the prevention of obesity. Each item had one correct response. A correct response was assigned a score of 1 and an incorrect response was assigned a score of 0. The total possible score ranged from 0 to 30, with higher scores indicating greater knowledge.

The knowledge items covered major areas related to obesity prevention, including basic concepts of obesity, health risks associated with obesity, healthy dietary practices, physical activity, sedentary behaviour, weight control and healthy lifestyle practices.

Validity and reliability

The content validity of the structured questionnaire was established through review by five experts from the fields of nursing and medicine. The experts assessed the items for relevance, clarity, simplicity and adequacy. Necessary modifications were incorporated based on their recommendations.

Reliability of the knowledge questionnaire was assessed using the split-half method and the Spearman-Brown correction. The obtained reliability coefficient was 0.82, indicating good internal consistency and reliability of the instrument.

Data collection procedure

Prior permission was obtained from the concerned institutional authorities before commencement of data collection. Eligible participants were approached individually and were informed about the purpose and procedure of the study. Written informed consent was obtained before participation.

The demographic information was collected first, followed by administration of the structured knowledge questionnaire. Participants were provided adequate time to complete the questionnaire. Completed questionnaires were checked for completeness and collected by the investigator while maintaining privacy and confidentiality.

Ethical considerations

Ethical principles were maintained throughout the study. Permission was obtained from the concerned institutional authorities before data collection. Participation was voluntary, and informed consent was obtained from all participants. Participants were informed that they could withdraw from the study at any time without any adverse consequences. Confidentiality and anonymity of participant information were maintained, and the collected information was used only for research purposes.

Statistical analysis

The collected data were coded, tabulated and analysed using descriptive and inferential statistics. Categorical

variables were summarized using frequencies and percentages. The knowledge score was calculated from 30 multiple-choice questions, with each correct response assigned a score of 1 and each incorrect response assigned a score of 0, resulting in a possible total score ranging from 0 to 30.

The observed total knowledge scores in the present sample ranged from 11 to 27, with a mean score of 21.60 ± 3.78 and a median score of 22.5 (IQR: 19–24). The distribution of the total knowledge score was assessed using the Shapiro–Wilk test and was found to deviate significantly from normality ($W = 0.935$, $P = 0.003$).

For the primary analysis, the total knowledge score was classified into the predefined categories specified in the study instrument: inadequate, moderately adequate and adequate knowledge. This categorization was retained because the primary study objective was to examine the association between the predefined level of knowledge and selected categorical demographic variables. The limitations associated with categorizing a continuous score were considered when interpreting the findings.

The association between the categorized knowledge level and categorical demographic variables was assessed using Pearson's chi-square test. Where the assumptions for the chi-square test were not adequately satisfied because of small expected cell frequencies, exact tests were used as appropriate. Statistical significance was assessed using a two-sided P -value of <0.05 .

For comparisons involving the original continuous knowledge score, non-parametric tests were considered appropriate because the knowledge-score distribution was non-normal. The Mann–Whitney U test was applicable for demographic variables with two categories, while the Kruskal–Wallis test was applicable for variables with more than two categories.

Statistical analysis was performed using IBM SPSS Statistics, version 20.0.

Results

A total of 60 adults from the selected urban area of MIG Block, Panki, Kanpur, were included in the study. The findings are presented according to the study objectives.

Participant characteristics

The demographic characteristics of the participants are presented in Table 1. Of the 60 participants, 45 (75.0%) belonged to the age group of 25–44 years, 13 (21.7%) were aged 45–59 years and 2 (3.3%) were above 60 years. The majority were male (43; 71.7%).

Regarding educational status, 27 (45.0%) participants were graduates, 21 (35.0%) had secondary education, 7 (11.7%) were postgraduates and 5 (8.3%) had primary education. None of the participants were illiterate.

Table 1: Sociodemographic characteristics of study participants.

Variable	Category	n (%)
Age (years)	25–44	45 (75.0)
	45–59	13 (21.7)
	>60	2 (3.3)
Gender	Male	43 (71.7)
	Female	17 (28.3)
Education	Illiterate	0 (0.0)
	Primary	5 (8.3)
	Secondary	21 (35.0)
	Graduate	27 (45.0)
Occupation	Postgraduate	7 (11.7)
	Unemployed	19 (31.7)
	Private employee	14 (23.3)
	Government employee	3 (5.0)
Monthly family income (₹)	Self-employed	24 (40.0)
	<10,001	20 (33.3)
	10,001–20,001	19 (31.7)
	20,001–30,000	12 (20.0)
Type of diet	>30,000	9 (15.0)
	Vegetarian	40 (66.7)
	Non-vegetarian	6 (10.0)
Physical activity	Mixed	14 (23.3)
	Sedentary	6 (10.0)
	Moderate	24 (40.0)
Previous knowledge	Active	30 (50.0)
	Yes	45 (75.0)
	No	15 (25.0)

With respect to occupation, 24 (40.0%) participants were self-employed, 19 (31.7%) were unemployed, 14 (23.3%) were private employees and 3 (5.0%) were government employees. Regarding monthly family income, 20 (33.3%) participants reported an income below ₹10,001, while 19 (31.7%) reported ₹10,001–20,001, 12 (20.0%) reported ₹20,001–30,000 and 9 (15.0%) reported more than ₹30,000.

Most participants (40; 66.7%) followed a vegetarian diet, 14 (23.3%) followed a mixed diet and 6 (10.0%) were non-vegetarian. Regarding physical activity, 30 (50.0%) participants reported an active level of physical activity, 24 (40.0%) reported moderate activity and 6 (10.0%) reported a sedentary lifestyle. Previous knowledge regarding lifestyle modification for obesity prevention was reported by 45 (75.0%) participants, whereas 15 (25.0%) had no previous knowledge.

Knowledge regarding lifestyle modification for obesity prevention

The distribution of participants according to their level of knowledge is presented in Table 2.

Among the 60 participants, 30 (50.0%) had adequate knowledge, 24 (40.0%) had moderately adequate knowledge

and 6 (10.0%) had inadequate knowledge regarding lifestyle modification for the prevention of obesity.

Thus, 54 (90.0%) participants demonstrated either moderately adequate or adequate knowledge, whereas 6 (10.0%) demonstrated inadequate knowledge.

Distribution of total knowledge score

The total knowledge score ranged from 11 to 27 among the 60 participants. The mean knowledge score was 21.60 ± 3.78 , while the median score was 22.5 (IQR: 19–24). The Shapiro–Wilk test indicated that the distribution of the total knowledge score significantly deviated from normality ($W = 0.935$, $P = 0.003$). Therefore, the predefined knowledge-level categories were retained for the primary association analysis in accordance with the stated study objective.

Association between level of knowledge and selected demographic variables

The association between the level of knowledge regarding lifestyle modification for prevention of obesity and selected demographic variables was assessed. The total knowledge score was non-normally distributed (Shapiro–Wilk $W = 0.935$, $P = 0.003$). For the primary analysis, the predefined knowledge categories of inadequate, moderately adequate and adequate knowledge were therefore used to examine associations with the categorical demographic variables.

No statistically significant association was observed between level of knowledge and age ($\chi^2 = 4.391$, $df = 4$, exact $P = 0.193$), gender ($\chi^2 = 0.246$, $df = 2$, exact $P = 0.845$), educational status ($\chi^2 = 7.875$, $df = 6$, exact $P = 0.241$), occupation ($\chi^2 = 5.761$, $df = 6$, exact $P = 0.512$), monthly family income ($\chi^2 = 7.927$, $df = 6$, exact $P = 0.205$), type of diet ($\chi^2 = 1.053$, $df = 4$, exact $P = 0.860$), or physical activity ($\chi^2 = 5.704$, $df = 4$, exact $P = 0.158$).

However, a statistically significant association was observed between previous knowledge regarding obesity prevention and level of knowledge ($\chi^2 = 30.000$, $df = 2$, exact $P < 0.001$). Participants who reported previous knowledge were more frequently represented in the adequate knowledge category, whereas none of the participants without previous knowledge were classified as having adequate knowledge. The detailed findings are presented in Table 3.

Discussion

The present study assessed knowledge regarding lifestyle modification for the prevention of obesity among 60 adults residing in a selected urban area of Kanpur. The study is relevant in view of the increasing burden of obesity and other metabolic non-communicable diseases in India. The ICMR-INDIAB national study involving more than 113,000 participants reported a generalised obesity prevalence of 28.6% and abdominal obesity prevalence of 39.5%, with most metabolic non-communicable diseases being more frequent in urban than rural populations [1].

In the present study, three-fourths of the participants were aged 25–44 years and nearly three-fourths were male.

Table 2: Distribution of participants according to knowledge level.

Knowledge level	n	%
Inadequate	6	10.0
Moderately adequate	24	40.0
Adequate	30	50.0
Total	60	100.0

Table 3: Association Between Level of Knowledge Regarding Lifestyle Modification for Prevention of Obesity and Selected Demographic Variables.

Selected demographic variable	χ^2 value	df	P-value	Interpretation
Age	4.391	4	0.193	Not significant
Gender	0.246	2	0.845	Not significant
Educational status	7.875	6	0.241	Not significant
Occupation	5.761	6	0.512	Not significant
Monthly family income	7.927	6	0.205	Not significant
Type of diet	1.053	4	0.860	Not significant
Physical activity	5.704	4	0.158	Not significant
Previous knowledge	30.000	2	<0.001	Significant

Note: The Pearson chi-square (χ^2) statistic is presented. Because several contingency tables contained small, expected frequencies, exact P-values were used for inference. Statistical significance was considered at $P < 0.05$.

The sample also had a relatively high educational profile, with 45% being graduates. Most participants reported some level of physical activity, and 75% reported previous knowledge regarding lifestyle modification for obesity prevention. These characteristics are important when interpreting the knowledge findings because previous exposure to health information may influence participants' ability to recognize obesity risk factors and preventive measures.

The present study found that 50% of participants had adequate knowledge and 40% had moderately adequate knowledge, while 10% had inadequate knowledge. Thus, although most participants demonstrated at least moderately adequate knowledge, a measurable proportion had insufficient knowledge. This finding is broadly consistent with evidence from India demonstrating variability in knowledge concerning obesity, nutrition and physical activity. A community-based study from urban South India found that 60.3% of participants scored below 50% on knowledge assessment concerning overweight and obesity, indicating substantial knowledge gaps in some urban populations [2].

Another Indian study among apparently healthy adults found that individuals with higher educational attainment had significantly higher nutrition and physical activity knowledge. The study also highlighted the need to strengthen health education efforts so that knowledge can be translated into appropriate dietary and physical activity practices [3]. In contrast, the present study did not demonstrate a statistically significant association between educational status and knowledge level. This difference may be related to the relatively small sample size and the educational distribution of the present participants, among whom no participant was illiterate and nearly half were graduates.

The present study identified previous knowledge regarding obesity prevention as the only reported demographic characteristic significantly associated with knowledge level. Participants who reported previous exposure to information had better knowledge than those who reported no previous knowledge. This finding supports the importance of access to understandable and relevant health information. Previous research has demonstrated that health literacy is related to obesity-related outcomes, and inadequate health literacy may represent a modifiable barrier to effective obesity prevention and management [4,5].

The finding is also consistent with community-based research from India emphasizing the importance of health education. A study of urban married women in Delhi found awareness of several causes, consequences and preventive measures of obesity, but also identified misconceptions regarding obesity and recommended strengthening community health promotion and mass-media education [7]. Similarly, a mixed-methods study from Kolkata reported that participants identified lifestyle, urbanisation, behavioural factors and inadequate health education among important contributors to obesity risk and concluded that health education was fundamental to prevention [9].

Lifestyle modification remains an important component of obesity prevention. Evidence from systematic reviews indicates that interventions involving diet, physical activity and behavioural strategies can help prevent excessive weight gain. A systematic review and meta-analysis of 29 randomized trials involving 37,407 adults found that weight-gain-prevention interventions resulted in significantly less weight gain than control conditions [10]. A separate systematic review found strong evidence for an association between physical activity and prevention of weight gain in adults, with greater protection observed at higher levels of moderate-to-vigorous physical activity [11].

The results therefore have practical relevance for community health nursing. Nurses working in primary healthcare and community settings can contribute to obesity prevention through individualized counselling, nutrition education, promotion of physical activity, identification of risk factors and reinforcement of sustainable lifestyle behaviours. Indian evidence also suggests that structured health education interventions can improve obesity-related practices [12]. In an urban community intervention among women, health education was associated with improvement in dietary and physical activity parameters and weight-related outcomes [13].

In the present study, knowledge was initially measured as a numerical score ranging from 0 to 30. The observed scores ranged from 11 to 27, with a mean of 21.60 ± 3.78 and a median of 22.5. The Shapiro-Wilk test indicated a non-normal distribution of the knowledge scores. Nevertheless, the study objective specifically focused on determining the association between the predefined level of knowledge and selected demographic variables. Therefore, the predefined categories of inadequate, moderately adequate and adequate knowledge were retained for the primary association analysis. Since both the

categorized knowledge outcome and the selected demographic characteristics were categorical variables, the chi-square test was used, with exact P-values considered where expected cell frequencies were small. This approach provides an analysis consistent with the stated objective while acknowledging the limitations associated with categorizing a numerical knowledge score. In addition, knowledge and actual lifestyle behaviour are distinct constructs. A participant may possess adequate knowledge but still experience barriers to healthy behaviour, including time constraints, work-related demands, environmental factors, food availability and limited motivation. Research among young adults in India has similarly identified lack of time, work commitments, easy access to unhealthy foods and lifestyle-related barriers to weight management [14].

A statistically significant association was observed between previous knowledge regarding obesity prevention and the level of knowledge ($\chi^2 = 30.000$, $df = 2$, exact $P < 0.001$). Participants who reported previous knowledge were more frequently classified as having adequate knowledge, whereas participants who reported no previous knowledge were not represented in the adequate knowledge category. This finding suggests an association between prior exposure to information and the measured knowledge level in this sample. However, because the study used a cross-sectional design, the finding should not be interpreted as demonstrating a causal effect of previous exposure on knowledge.

No statistically significant association was observed between level of knowledge and age, gender, educational status, occupation, monthly family income, type of diet or physical activity in the present sample. These findings indicate that statistically significant differences in categorized knowledge level were not demonstrated for these demographic characteristics under the conditions of the present study. However, the absence of statistical significance should be interpreted cautiously because the study included only 60 participants, several demographic subgroups were small, and participants were selected using non-probability purposive sampling from a single urban locality. These factors may limit statistical power and generalizability.

Overall, the findings suggest that community adults may have a reasonable level of awareness regarding obesity prevention, but continued and targeted health education is required. Importantly, health education should not be limited to providing information; it should also focus on practical skills, goal setting, self-monitoring, culturally appropriate dietary choices and feasible physical activity strategies. Such practical approaches to physical activity and prevention are also relevant to broader lifestyle-related health promotion [15].

Conclusion

The present study found that 50.0% of participants had adequate knowledge regarding lifestyle modification for prevention of obesity, while 40.0% had moderately adequate knowledge and 10.0% had inadequate knowledge. The total knowledge score was non-normally distributed. For the

primary objective, the predefined knowledge-level categories were therefore used to examine associations with selected categorical demographic variables. A statistically significant association was observed between previous knowledge regarding obesity prevention and level of knowledge, whereas no statistically significant association was observed with age, gender, educational status, occupation, monthly family income, type of diet or physical activity.

The findings highlight the importance of continuous community-based health education regarding healthy dietary practices, regular physical activity, reduction of sedentary behaviour, weight control and other sustainable lifestyle practices. However, the findings should be interpreted in view of the small sample size, purposive sampling and single-community setting. Knowledge should not be considered equivalent to actual lifestyle behaviour, and future studies should evaluate both knowledge and behavioural outcomes.

Limitations

1. The study included only 60 participants from a selected urban locality of Kanpur; therefore, the findings cannot be generalized to the wider adult population.
2. Non-probability purposive sampling may have introduced selection bias and limited representativeness.
3. The study assessed knowledge regarding lifestyle modification but did not objectively assess participants' actual dietary intake, physical activity, BMI or long-term behavioural practices.
4. Data were collected using a structured self-report questionnaire and may therefore have been influenced by participants' recall, interpretation or socially desirable responses.
5. The cross-sectional design does not permit determination of a causal relationship between previous exposure to health information and knowledge level.

Recommendations

1. Similar studies should be conducted using larger probability-based samples from multiple urban communities to improve generalizability.
2. Comparative studies may be undertaken among urban and rural adults to identify differences in knowledge and lifestyle practices.
3. Interventional studies should evaluate the effectiveness of structured nurse-led health education programmes on obesity prevention.
4. Future studies should assess knowledge together with attitude, dietary practices, physical activity, sedentary behaviour and anthropometric indicators such as BMI and waist circumference.
5. Community-based programmes should use culturally appropriate educational materials and multiple

communication methods, including individual counselling, group education and audiovisual approaches.

6. Longitudinal studies should be undertaken to determine whether improved knowledge translates into sustained lifestyle modification and prevention of weight gain.
7. Future research should explore barriers that prevent adults from translating obesity-prevention knowledge into healthy lifestyle behaviours.

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