An exploratory study to assess the lifestyle risk factors associated with obesity among undergraduate students of selected colleges of District Sirmour, Himachal Pradesh

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ABSTRACT

*Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. People with obesity are at higher risk for health complications, such as diabetes, heart disease and some forms of cancer. Obesity is the second leading cause of preventable deaths after smoking. Worldwide obesity was more than 1.9 billion adults, 18 years and older were overweight. Overall 650 million people were obese. 39% of adults aged 18 years and over were overweight and 13% were obese. To explore the lifestyle risk factors among undergraduate students. The study adopted exploratory research and was conducted at selected colleges of District Sirmour, H.P. A total of 30 undergraduate female students in the age group of 17-25 years were selected by multistage cluster random sampling technique. A self-structured questionnaire was used to assess the lifestyle risk factors associated with obesity among undergraduate students. Data analysis was done with descriptive and inferential statistics. The pilot study finding shows that 33.3% of undergraduate girls were pre-obese. And 6.7 % of girls come under obese class 1 and 60% of girls having BMI in the normal range. The finding shows that the girls who were obese having menstrual irregularity and 33.3% of girls suffered from the polycystic ovarian disease. 33.3% Girls having a family history of obesity. There is a significant association between psychological factors and gynecological problems that is 0.001**. Conclusion: The pilot study results show that unhealthy dietary habits and lifestyle behavior that should be targeted and can be modified. This could be achieved through promoting intervention program that leads to changing the built environment, weight management practices, counselling and affecting behavioral modification of student's life style and dietary habits.*

Keywords— *Lifestyle risk factors, Obesity, Undergraduate students*

1. BACKGROUND OF THE STUDY

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health. People are generally considered obese when their body mass index a measurement obtained by dividing a person's weight by the square of persons height (is 30kg/m square) [1].

People with obesity are at higher risk for health complications, such as diabetes, heart disease, osteoarthritis, sleep apnea, breathing problem and some forms of cancer (uterine, breast, colorectal, kidney and gall bladder).Obesity is the second leading cause of preventable deaths after smoking [2].

Worldwide obesity was more than 1.9 billion adults, 18 years and older were overweight. Over all 650 million people were obese. 39% of adults aged 18 years and over were overweight and 13% were obese [3]

2. NEED FOR STUDY

According to WHO obesity is one of the most neglected, public health problem in both developed and developing countries [4].
In Himachal Pradesh according to National Family Health Survey in 2015-2016 in age group 15-49 years the women who are obese or overweight are 38.4% in urban and 27.6% in rural area. [5]

In Distt. Sirmour the health indicators of National Family Health Survey in 2016-2017 in age group 15-49 years the women are obese or overweight were 25.2%. [5]

The burden of obesity is more affecting the young adults, especially the college students are highly vulnerable to obesity as living away from home, transitioning to independent living and making their own food choices, irregular routines and attracted to newer lifestyle.[6]

Most of people think that being overweight is an appearance issue. But being overweight is actually a medical problem, because it can seriously affects a person's health. It increases the blood pressure, fatty liver, arthritis, cancer and asthma. The prevalence of obesity among adults in developing countries are consistently high. This indicates that there is a need for health campaign and control programs to decrease the obesity rate. With the view of the above problems it was felt need to determine the life style practices of obese adults. So that, the preventive practices should taught to the students.

3. CONCEPTUAL FRAMEWORK
Conceptual framework based upon Health Belief Model Rosenstoch's (1974) and Backer and Maimen's (1975)
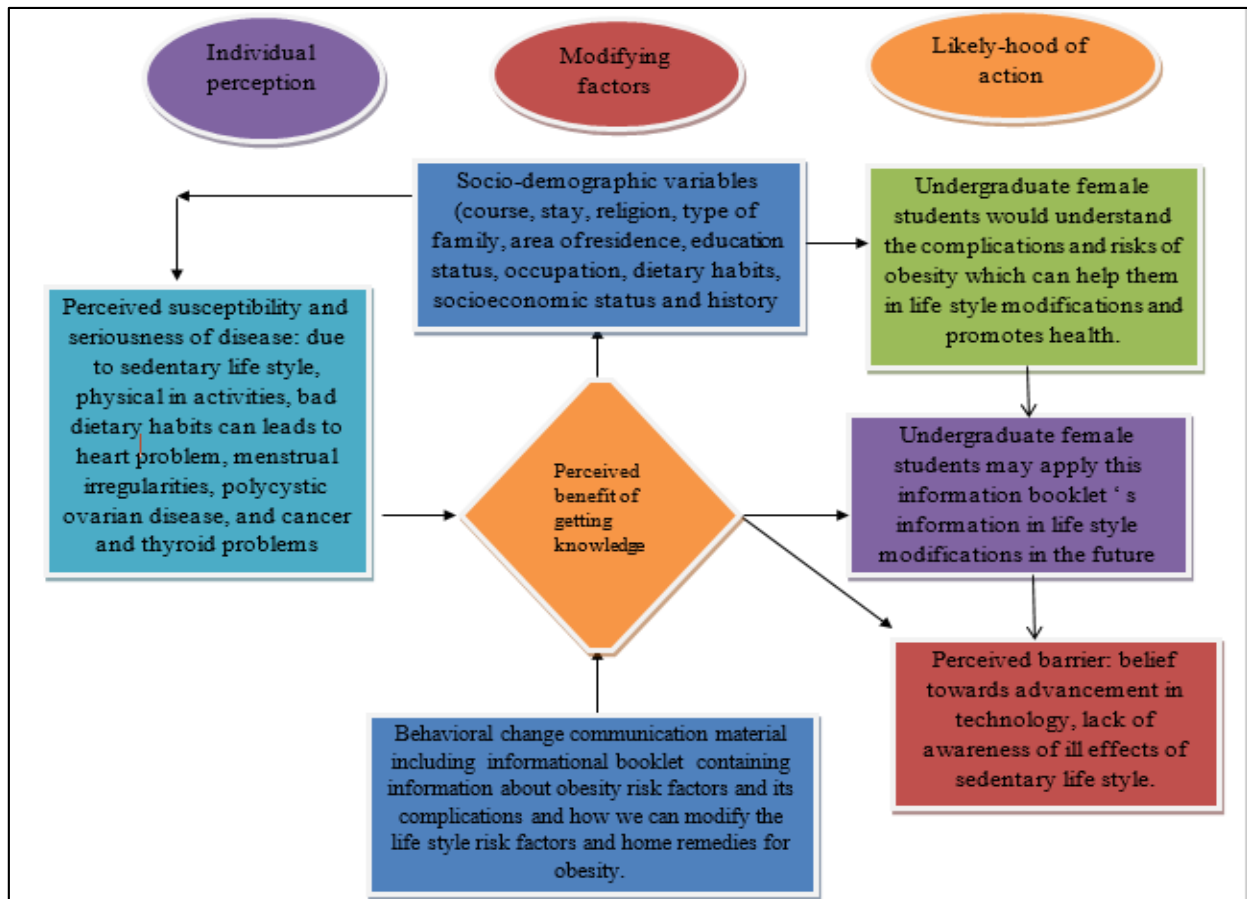
Fig. 1: Conceptual framework

4. REVIEW OF LITERATURE

S no.	Name of researcher	Methodology	Results
1	A.O. Musaiger, O.L.Lloyed, A.B. Bener and S.M. Al-Neyadi (2013) **Title of the study:-** Lifestyle factors associated with obesity among male university students in the united Arab Emirates.	**Study design:** descriptive cross sectional design. **Sample:-**male university students in the united Arab emirates. **Sample Size:-** 300 male university students **Study setting:-**United Arab Emirates university. **Tool:-**self structured questionnaire related to socioeconomic background and lifestyle factors. Weight and height were measured for each male.	The overall prevalence of obesity among male university students was 35.7percent. There was statistically significant association between the prevalence of obesity and family history of obesity (p<0.0001), as well as lack of practicing sports(p<0.038)[7].
2	Kirti Deshpande, Santosh Patel, Rashmi Bhujade, Pippal Deepak Title of the study:- lifestyle and obesity among college	**Study design:-** descriptive cross sectional design. **Sample:-**college students **Sample size:-**202 students **Study setting:-**Ujjain, India **Tool:-** self-administered questionnaire enquiring family history of NCD, food	Nearly half (44.9%) of the students were either overweight or obese. As per recommended WC cut off points (68% students had central obesity. All most all (>90%) were frequent fast food eaters, eat between meals and not interested in physical activities. The study conclude

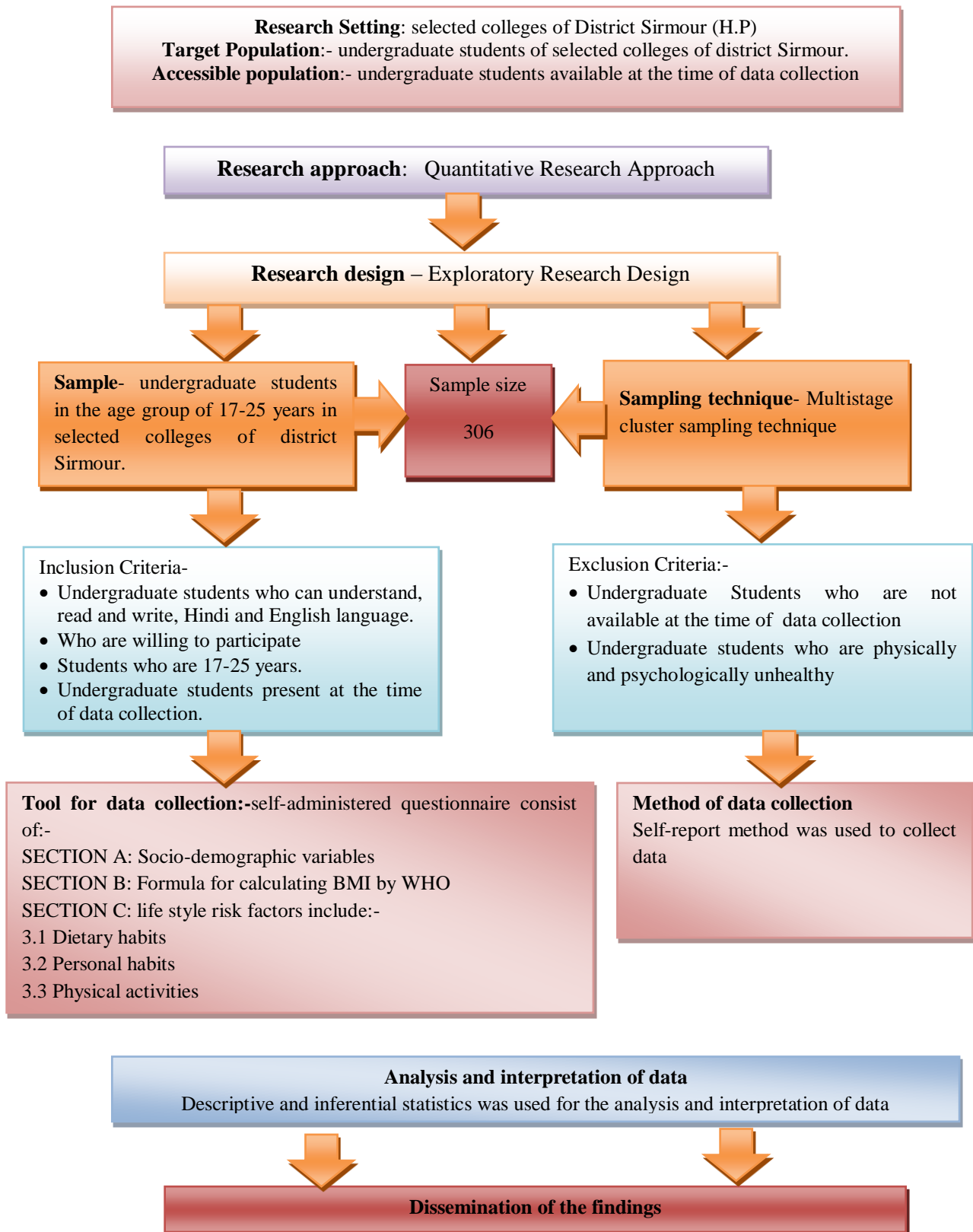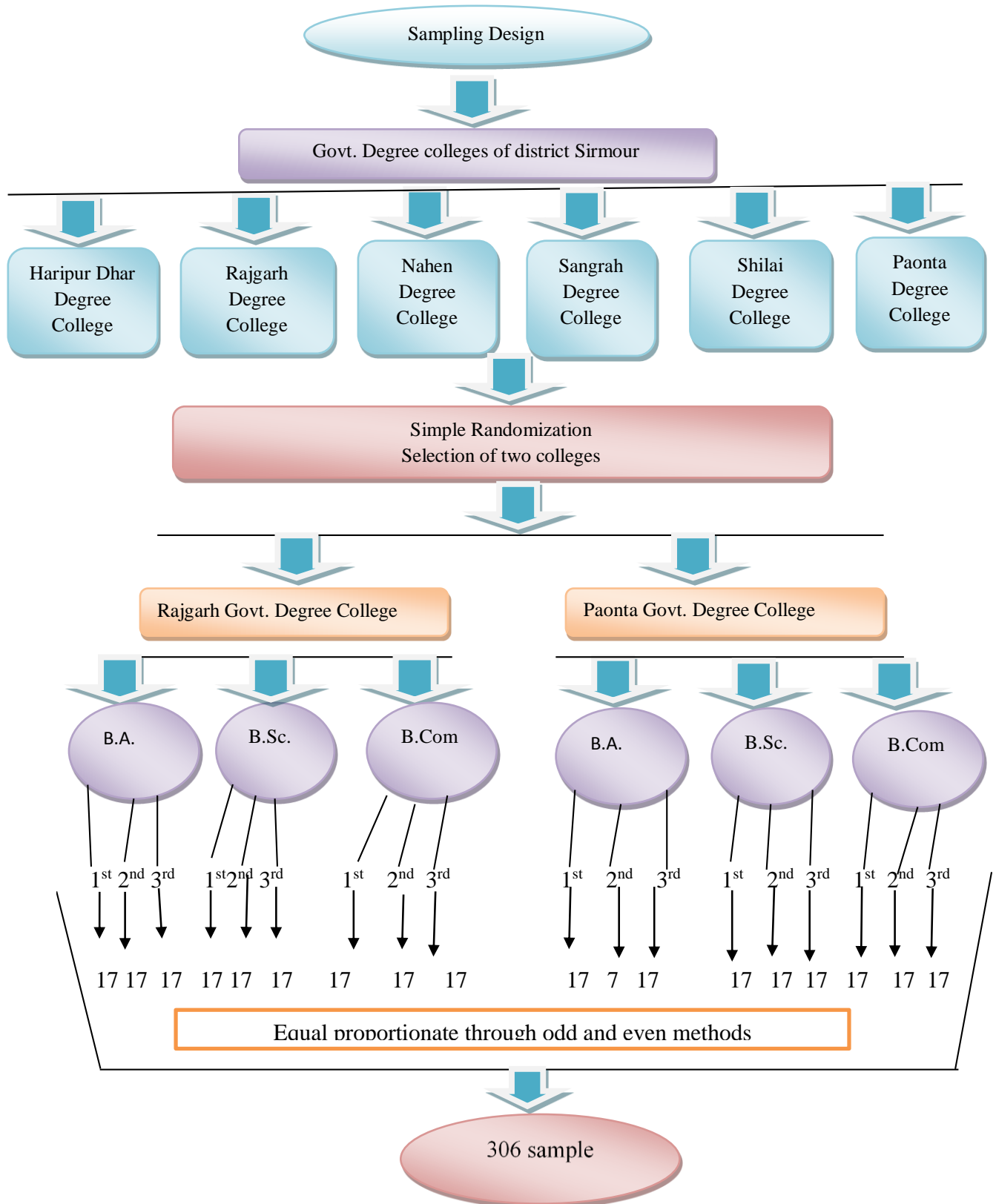| students.	habits and physical activity. Body Mass Index (BMI) and Waist circumference (WC) was measured to estimate burden of overweight /obesity.	that if they continue their unhealthy food habits and physical inactivity they are likely to develop lifestyle disease at an early age[8].

5. METHODOLOGY

Research Setting: selected colleges of District Sirmour (H.P)
Target Population:- undergraduate students of selected colleges of district Sirmour.
Accessible population:- undergraduate students available at the time of data collection

Research approach: Quantitative Research Approach

Research design – Exploratory Research Design

Sample- undergraduate students in the age group of 17-25 years in selected colleges of district Sirmour.

Sample size

306

Sampling technique- Multistage cluster sampling technique

Inclusion Criteria-
- Undergraduate students who can understand, read and write, Hindi and English language.
- Who are willing to participate
- Students who are 17-25 years.
- Undergraduate students present at the time of data collection.

Exclusion Criteria:-
- Undergraduate Students who are not available at the time of data collection
- Undergraduate students who are physically and psychologically unhealthy

Tool for data collection:-self-administered questionnaire consist of:-
SECTION A: Socio-demographic variables
SECTION B: Formula for calculating BMI by WHO
SECTION C: life style risk factors include:-
3.1 Dietary habits
3.2 Personal habits
3.3 Physical activities

Method of data collection
Self-report method was used to collect data

Analysis and interpretation of data
Descriptive and inferential statistics was used for the analysis and interpretation of data

Dissemination of the findings

Fig. 2: Methodology

Fig. 3: Sample Design

5.1 Method of data collection:-Self structured questionnaire

5.2 Tool for data collection:-self-administered questionnaire consist of:

SECTION A: Socio-demographic variables

SECTION B: Formula for calculating BMI or Qutelet's index

SECTION C: life style risk factors include:-

(a) Dietary habits

(b) Personal habits

(c) Physical activities

(d) Stress

Table 1: Description of tools

Name of the tool	Description	Developed by	Method
Socio demographic profile (18 questions)	It includes:- age, course, semester, stay, religion, type of family, afrea of residence, educational staus of father and mother occupational status of mother and father, dietary habits number of siblings, parenting by, gyencological problem medical history, socio economic status .	Researcher	Self-Administered Questionnaire
Anthropometric measurements	It include: height and weight BMI calculation. Classification of overweight and obesity according to WHO	Given by WHO	
Life style risk factors	It consist of 4 domain Dietary habits(13) Personal habits(13) Physical activities(13) Stress(10)	Researcher	Self-Administered Questionnaire

6. CONTENT RELIABILITY

Table 2: Content reliability

Reliability method	Formula	Interpretations
For internal consistency Cronbach's alpha was calculated	$$\alpha = \left(\frac{K}{K-1} \right)\left(1 - \frac{\sum V_i}{V_T} \right)$$	0.7

7. CONTENT VALIDITY

Validity of the tool was obtained from 7experts from the following departments: Community Health Nursing, Medical Surgical Nursing, Mental Health Nursing, oncology medicine and Child health nursing.

8. PILOT STUDY

Study setting: Akal College of agriculture, Baru Sahib
Study sample:-undergraduate students in the age group of 17-25 years
Sample size: 30
Sampling technique: multistage cluster random sampling
Days for data collection: 1day

Pilot study was conducted on 2nd week of February 2019 to ensure the reliability of the tool and feasibility of the study. The study was conducted on 30 students of Akal College of Agriculture, Baru Sahib. Data was collected by self-administered questionnaire. Since no difficulty was encountered to carry out the pilot, therefore the study was considered as feasible.

9. ETHICAL CONSIDERATION

- A written informed consent was obtained from each subject.
- Subjects were informed that they can withdraw from the study at any point.
- The anonymity and confidentiality of the subjects were protected throughout the study.
- Professional norms were maintained.
- Three principles which need to be followed in any research which is beneficence, respect of human dignity and justice was considered in the study and practiced during the actual conduction of the study.
- There was no physical and psychosocial harm to the study subjects.

10. PLAN FOR DATA ANALYSIS

- Researcher obtained permission from principal of Akal College of nursing.
- The investigator had obtained a written formal permission from the dean of Akal College of Agriculture.
- Informed written consent was taken from the samples after giving explanation about the purpose of the study, assuming their anonymity and confidentiality
- Questionnaire were given to assess the personal profile and the life style risk factors related to obesity and after that height, Weight was measured.

The data analysis was done according to the objectives of the study. Both descriptive and inferential statistics was used.
(a) Descriptive Analysis: Frequency, percentage
(b) Inferential Analysis: Chi- square test will be used to find the association between the life style risk factors with the selected socio-demographic variables.

11. ANALYSIS OF PILOT STUDY
11.1 Data analysis and interpretation
In current study data analysis is described under following sections:-
Section A: Personal profile of the subjects.
Section B: Assessment of Obesity among subjects.
Section C: Assessment of lifestyle risk factors associated with obesity among subjects.
Section D: Association of socio demographic variables with lifestyle risk factors

11.1.1 Section A: Personla profile of the subjects

Table 3: Frequency and Percentage distribution of personal profile of the subjects, N= 30

S no.	Variables	Categories	Frequency(f)	Percentage (%)
1	Age	17-19 years	21	70
		20-22 years	9	30
		23-25 years	0	0
2	Course	B.Sc.	30	100
3	Year	1st	10	33.3
		2nd	10	33.3
		3rd	10	33.3
4	Stay	Hostel	30	100
		PG	0	0
		Day-scholar	0	0
5	Religion	Hindu	28	93.3
		Muslim	0	0
		Sikh	2	6.7
		Christian	0	0
6	Type of family	Nuclear	12	40
		Joint	18	60
		Extended	0	0
7	Area of residence	Urban	4	13.3
		Rural	14	46.7
		Semi urban	12	40
8	Education of father	No formal education	2	6.7
		Primary	1	3.3
		Elementary	1	3.3
		Secondary	2	6.7
		Higher secondary	16	53.3
		Graduate	7	23.3
		Post graduate or above	1	3.3
9	Education of mother	No formal education	2	6.7
		Primary	1	3.3
		Elementary	1	3.3
		Secondary	7	23.3
		Higher secondary	17	56.7
		Graduate	1	3.3
		Post graduate or above	1	3.3
10	Occupation of father	Govt. Employee	16	53.3
		Private employee	3	33.3
		Farmer	1	56.7
		Retired	4	3.3
		Any other occupation	6	20
11	Occupation of mother	Govt. Employee	2	6.7
		Private employee	10	33.3
		House maker	17	56.7
		Retired	1	3.3
		Any other occupation	0	0
12	Monthly family income	Below <5,000	0	0
		5001 -10,000	2	6.7
		10,001 -20,000	10	33.3
		20,001 -30,000	17	56.7
		>30,000	1	3.3
13	Dietary habit	Vegetarian	17	56.7
		Non vegetarian	8	26.7
		Eggetarian	5	16.7

14	Number of siblings	One	12	40
		Two	10	33.3
		Three or more	8	26.7
15	Parenting by	Biological parents	24	80
		Guardian	6	20
		Orphanage	0	0
		Foster	0	0
16	Gynecological problem	Yes	10	33.3
		No	20	66.7
17	Medical conditions	Yes	7	23.3
		No	23	76.7
18	History of obesity	Yes	10	33.3
		No	20	66.7
19	Use of medications	Yes		

11.1.2 Section B: Assessment of Obesity among subjects.

Table 4: Distribution of undergraduate students based on Obesity: (N=30)

S no.		Class	Frequency(f)	Percentage (%)
1		Normal range	18	6.
2	Obesity	Pre obese	10	33.3
3		Obese class 1	2	6.7
4		Obese class 2	0	0
5		Obese class 3	0	0

11.1.3 Section C: Assessment of lifestyle risk factors associated with obesity among subjects.

Table 5: Frequency and Percentage distribution of lifestyle risk factors associated with obesity. (Dietary Habits) N=30

S no.	Variables	Categories	Frequency(f)	Percentage (%)
1	Number of meals per day	2 meals	2	6.7
		3 meals	19	63.3
		More than 3	9	30
2	Daily Breakfast Intake	Never	1	3.3
		Always	14	46.7
		Sometimes	14	46.7
		Rarely	1	3.3
3	Snacks between meals	Never	4	13.3
		Always	6	20
		Sometimes	17	56.7
		Rarely	3	10
4	Tea and coffee in a day	Never	7	23.3
		1-2 times	12	70
		3-5 times	3	6.7
5	Consume milk and milk product	Never	3	10
		1-3 times	17	56.7
		4-7 times	9	30
		More than 7 times	1	3.3
6	Consume junk food	Yes	25	83.3
		No	5	16.7
7	Fast food in a week	Never	2	6.7
		1-3 times	23	76.7
		4-7 times	5	16.7
		More than 7 times	0	0
8	Vegetables in a week	Never	1	3.3
		Everyday	23	76.7
		From time to time	6	20
9	Meat in a week	Never	26	86.7
		Every day	1	3.3
		2-3 times	3	10
		Rarely	0	0
10	Soft drink in a week	Never	17	56.7
		1-3 times	13	43.3
		4-7 times	0	0
		More than 7 times	0	0

11	Sweetened food in a week	Never	5	16.7
		1-3 times	24	80
		4-7 times	1	3.3
		More than 7 times	0	0
12	Carbohydrate rich food in a week	Never	3	10
		1-3 times	9	30
		4-7 times	11	36.7
		More than 7 times	7	23.3
13	Fish meal in a week	Never	28	93.3
		1-3 times	2	6.7
		4-7 times	0	0

Table 6: Frequency and Percentage distribution of lifestyle risk factors associated with obesity.(Personal Habits) N=30

S no.	Variables	Categories	Frequency(f)	Percentage (%)
1	Sleep at night	8-10 pm	6	20
		11pm -12 am	21	70
		1-3am	3	10
		After 3am	0	0
2	Go to bed on time	Never	2	6.7
		Always	9	30
		Sometimes	15	50
		Rarely	4	13.3
3	Hours of sleep	4-6 hrs	8	26.7
		7-8hrs	20	66.7
		9-10 hrs	2	6.7
		More than 10 hrs	0	0
5	Complete sleep at night	Yes	25	83.3
		No	5	16.7
7	Relationship between sleep duration and day energy	Yes	28	93.3
		No	2	6.7
9	Smoking status	Yes	0	0
		No	30	100
10	Sit with smokers while they are smoking	Yes	2	6.7
		No	28	93.3
12	Daily time spend with mobile phone	30 min - 1hour	5	16.7
		1 hour – 1.5 hours	9	30
		More than 1.5 hours	16	53.3
13	Use mobile phone during meals	Yes	4	13.3
		No	26	86.7

Table 7: Frequency and Percentage distribution of lifestyle risk factors associated with obesity. (Physical activities) N=30

S no.	Variables	Categories	Frequency(f)	Percentage (%)
1	Exercise daily	Never	6	20
		Always	3	10
		Sometimes	15	50
		Rarely	6	20
2	Exercise for at least 20 minutes	Never	4	13.3
		1-2 times	17	56.7
		3-4 times	3	10
		5-6 times	5	16.7
		7 times	1	3.3
3	Participate in sports activities	Never	6	20
		Always	6	20
		Sometimes	8	26.7
		Rarely	10	33.3
4	Time spend in walking	1-10 min	2	6.7
		10-20 min	10	33.3
		30-40 min	13	43.3
		More than 50 min	5	16.7
5	Prefer walking instead of travelling	Never	4	13.3
		Always	11	36.7
		Sometimes	12	40
		Rarely	3	10

6	Walk for a time to go from place to place	Never	1	3.3
		Always	9	30
		Sometimes	18	60
		Rarely	2	6.7
7	Vigorous physical activities	Never	11	36.7
		Always	3	10
		Sometimes	12	40
		Rarely	4	13.3
8	Moderate physical activities	Never	4	13.3
		Always	12	40
		Sometimes	11	36.7
		Rarely	3	10
9	Physical activities in leisure time	Never	8	26.7
		Always	4	13.3
		Sometimes	13	43.3
		Rarely	5	16.7
10	Time spend for indoor activities	Never	2	6.7
		1-2 hrs	12	40
		3-4 hrs	9	30
		More than 4 hrs	7	23.3

Table 8: Frequency and Percentage distribution of lifestyle risk factors associated with obesity. (Stress) N=30

S no.	Variables	Categories	Frequency(f)	Percentage (%)
1	Express your feelings	Yes	10	33.3
		No	20	66.7
2	Participate in group activities	Yes	27	90
		No	3	10
3	Handling of personal problems	Yes	29	96.7
		No	1	3.3
4	Control important things	Yes	24	80
		No	6	20
5	Control irritation	Yes	18	60
		No	12	40
6	Support from family in study	Yes	24	86.7
		No	6	83.3
7	Find time for hobbies	Yes	5	16.7
		No	25	83.3
8	Think about problems	Yes	25	83.3
		No	5	16.7
9	Feel tired after adequate sleep	Yes	25	83.3
		No	5	16.3
10	Eat more while stressed	Yes	16	53.3
		No	14	46.7

11.1.4 Section D: Association of Lifestyle risk factors with age

Table 9: Association of Lifestyle risk factors with age

S no.	Variables	categories	Age		Chi test	df	P value
			17-19yrs	20-22yrs			
1	Number of meals per day	2 meals	1	1	2.334	2	.311
		More than 3	8	1			
2	Daily Breakfast Intake	Never	1	0	5.17.	3	.160
		Always	7	7			
		Sometimes	12	2			
		Rarely	1	0			
		Always	4	2			
		Sometimes	12	5			
		Rarely	3	0			
4	Vigorous physical activities	Never	9	2	7.922	3	0.048
		Always	0	3			
		Sometimes	9	3			
		Rarely	3	1			

Table 10: Association of Lifestyle risk factors with dietary habits

S no.	Variables	categories	Dietary habits			Chi test	df	P value
			Vegetarian	Non vegetarian	vegetarian			
1	consumption of meat in a week	Never Every day 2-3 times Rarely	16 1 0 0	5 0 3 0	5 0 0 0	9.7	4	0.045
	fish meals diet in a week	Never 1-3 times	17 0	6 2	5 0	5.8	2	0.053

Table 11: Association of Lifestyle risk factors with gynecological problems

S no.	Variables	Categories	Gynecological problems		Chi test	df	P value
			Yes	No			
1	Consume milk and milk product	Never	3	0	8.52	3	0.03
		1-3 times	6	11			
		4-7 times	1	8			
		More than 7 times	0	1			
2	Prefer walking instead of travelling	Never	2	2	9.4	3	0.024
		Always	1	10			
		Sometimes	4	8			
		Rarely	3	0			

Table 12: Association of Lifestyle risk factors with obesity history

S no.	Variables	categories	Obesity history		Chi test	df	P value
			Yes	No			
1	Vigorous physical activities	Never	1	11	15.0	3	0.002
		Always	2	1			
		Sometimes	8	4			
		Rarely	0	4			
2	Moderate physical activities	Never	0	4	10.6	3	0.014
		Always	2	4			
		Sometimes	0	9			
		Rarely	0	3			
3	Able to control impotant things	Yes	10	14	3.7	1	0.053
		No	0	6			

12. MAJOR FINDING OF THE STUDY
- The pilot study finding shows that 33.3% undergraduate girls were pre obese. And 6.7 % girls come under obese class 1.
- And 60% girls having BMI in normal range.
- Finding shows that the girls who were obese having menstrual irregularity and 33.3% girls suffered from polycystic ovarian disease.
- 33.3% Girls having a family history of obesity.
- There is significant association between psychological factors and gynecological problems i.e 0.001.

13. RECOMMENDATION
- The study can replicate on all population with different demographic variables.
- A planned teaching program can be conducted for students regarding obesity and its health consequences.
- A comparative study can be conducted to find the prevalence of obesity between urban and rural adults.
- A study to assess the effectiveness of self-care manual and health education modules for the students.
- A similar study can be conducted to assess the knowledge, attitude and practices regarding obesity among students.

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