Journal of Research in Social Sciences (JRSS)
ISSN: 2306-112X(E);2305-6533 (P)

Vol 14, Issue 1
JRSS, pp 134-158

Health Beliefs, Food Habits, and Appearance Schemas in Individuals with Centripetal Obesity: A Descriptive Study

Sameen Khalid[1] Fatima Kamran[2]

ABSTRACT

Article History:
Received:
June 22, 2025
Accepted:
December 20, 2025
Published:
December 22, 2025

Fundings:
This research received no specific grant from any Public, Commercial or not for profit sectors

Conflict of interest:
The author has declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Centripetal obesity refers to excessive visceral fat in which the abdomen protrudes, having a pot-like belly. A descriptive cross-sectional study was carried out to examine the distribution of health beliefs, food habits, and appearance schemas across diverse demographic, clinical, and health factors. The participants (N =140) with a mean age of M = 38.60, S.D = 10.79, comprised of individuals with a BMI > 30, visceral fat for women >32, and men >36 inches (IDF, 2007), were recruited from weight loss clinics, bariatric surgery centers, and from the general population of Lahore. Most of the previous studies highlighted that centripetal obese individuals are vulnerable to various chronic diseases, but limited research has addressed health beliefs, eating habits, and appearance schemes in these individuals. So, the descriptive study was carried out, and findings revealed that the majority of the individuals reported moderate importance to functional beliefs (one's ability to carry out daily tasks), biomedical beliefs (absence of illness), wellbeing beliefs (vitality), had healthy food habits, and were highly concerned about appearance schemas. The study variables differed across age, gender, education, birth order, marital status, duration of obesity, waist circumference, BMI, and screen time. Monthly family income emerged as a negative predictor of appearance schemas, with lower income associated with higher appearance concern. The findings highlighted the significance of demographic, clinical, and health factors in shaping their health beliefs, food habits, and appearance schemas. Furthermore, the study can help in reducing weight-related stigmatization, targeted interventions to promote healthy food choices, providing culturally relevant psychological counselling, and addressing these issues in vulnerable populations, which may reduce body dissatisfaction and improve overall health outcomes.

Keywords: Centripetal Obesity, Appearance Schemas, Health Beliefs, Food Habits.

[1] MS Scholar, Institute of Applied Psychology, University of the Punjab Lahore, Pakistan
Email: khalidsameen2@gmail.com
[2] Associate Professor, Institute of Applied Psychology, University of the Punjab Lahore, Pakistan. Email: fatimakamran.appsy@pu.edu.pk

Introduction

The World Health Organization defines obesity as: "abnormal or excessive fat accumulation that presents a health risk" (WHO, 2018). Centripetal obesity, also known as 'abdominal obesity or visceral obesity', is defined as excessive visceral fat or abdominal fat. Centripetal obesity is considered a diagnostic criterion for metabolic syndrome, because excess visceral fat is more dangerous than the other fats in our body (WHO, 2008). Centripetal obesity is more prevalent in middle-aged adults > 40 than in younger adults, and World Health Organization Asia Pacific cutoffs showed that the prevalence of centripetal obesity is 73.1% (37.3% in males, and 62.7% in females). Prevalence of abdominal obesity in Baluchistan (82.1%) and Punjab (73.3%) (Abdul et al., 2021). Certain family/cultural traditions and social media platforms had a greater impact on individuals' overall perceptions of not only health, but also related to their bodies. Pakistani culture glorifies females with slim bodies and men with muscles. People see in advertisements that they hire those individuals with certain body standards set by society, so people feel an internal pressure to be aligned with society's beauty standards (Abbasi et al., 2024).

This study was based on three different theoretical frameworks. According to the health belief model, centripetal obese individuals who believe they are more susceptible to further comorbid diseases are likely to engage in healthier food habits. However, cultural food preferences and long-term patterns of certain types of food choices can act as a barrier to healthy eating patterns. While perceiving benefits for adopting a healthy lifestyle, and cues to action like social media or medical advice about obesity risks can motivate them towards healthy food habits and improve appearance-related schemas. However, self-efficacy plays a crucial role in maintaining a healthy lifestyle or behavior change. (Malverdy & Kazemi, 2016). Theory of Planned Behavior aligned in a way that individuals' attitudes towards adopting a healthy lifestyle, and subjective norms, like cultural attitudes, stigmatization, familial food traditions, had influence on their health beliefs, appearance, and food habits, but perceived behavioral control leads to positive/ negative behavioral intentions. The Tripartite Influence Model highlighted how socio-cultural factors influence an individual's perception of their body image. In centripetal obese individuals, body dissatisfaction can promote unhealthy eating patterns and negative health beliefs. The media perpetuates a certain ideal body image by indicating thin and white skin as a standard of beauty. All of these sociocultural factors influence individuals to compare their

appearance with others and internalize that being slim is an ideal standard, due to which they will be highly concerned about appearance schemas (Keery et al., 2004).

Previous studies have shown that the prevalence of general and abdominal obesity in urban Asians, in which generalized obesity total 45.9%, out of which (females: 47.4%, and males: 43.2%), while abdominal obesity was 46.6% (females: 56.2%, and males: 35.1%). Across genders, females have a higher rate of being obese or centripetal obese than the male population (Deepa et al., 2010). Body dissatisfaction was seen mostly in women because of social media, in which the portrayal of slim females and negative stereotypes of being obese have a greater impact on their perceptions and beliefs related to body image (Jacob & Panwar, 2023). The knowledge and beliefs related to nutrition and dietary habits suggested that there is a gap in awareness of people, and promotion strategies for them need to be reoriented so that they would have healthy food habits and overall good health (Al Riyami et al., 2010). Married individuals had more association with central obesity as compared to unmarried individuals (Cairo & Choma, 2023), and eating regular breakfasts and home-cooked meals was seen to have a positive impact on the overall health of individuals (Irfan et al., 2024). Many general practitioners, nurses, and dieticians have a comprehensive knowledge related to health and nutritional factors, but still, the link between obesity and nutrition, weight management was lacking in them (Khamseh et al., 2023).

The existing literature demonstrated that diverse sociodemographic, clinical, and health factors had an impact on their health-related factors, including their beliefs, food habits, and appearance schemas. So, it was significant to highlight the interplay between these variables and their influence on beliefs that help in adopting dietary choices and building schemas related to the body. In Pakistani society, the influence of cultural food and the stigmatization of obesity have also helped us determine their positive and negative impact on our health. By analyzing its effect, health professionals can design culturally relevant interventions to prevent obesity and help vulnerable populations analyze the psychological or cultural factors that shape their perceptions and affect health. Furthermore, this study can help in public health strategies and targeted interventions to promote a healthy lifestyle, food choices, and improve body image perceptions related to individuals with centripetal obesity.

Aim of the Study

The study aimed to examine health-related behaviors, including health beliefs and food habits, which may have a psychological impact on influencing appearance schemas in centripetal obese individuals. This study further identified how individuals with diverse socio-demographics, clinical, and health indicators differ across health beliefs, food habits, and appearance schemas in these individuals.

Research Questions

- How do most individuals with centripetal obesity tend to report their health beliefs, food habits, and appearance schemas?
- Do individuals with diverse socio-demographics, clinical factors, and health indicators tend to differ in their health beliefs, food habits, and appearance schemas?

Research Method

Research Design

A descriptive (cross-sectional) research design was used in order to examine how most individuals with centripetal obesity tend to report their health beliefs, food habits, and appearance schemas.

Sample and Sampling Technique

The participants were recruited by using a purposive sampling technique because the population was not easily accessible and the study's restricted inclusion criteria; therefore, the sample represents the feasible number of accessible participants. The sample N=140 was calculated using G-power analysis with a medium effect size (d=0.5), and alpha of 0.05, with a power of 0.80. The sample comprised young and middle adults (WHO, 2022) who were recruited from weight loss clinics, fitness centers, hospitals performing surgeries for reducing abdominal fat, e.g., liposuction, bariatric surgery centers, and from the general population.

Inclusion and Exclusion Criteria

The study included individuals with a BMI > 30 (WHO, 2010), a waist circumference for women > 32 inches (80 cm), and men > 36 inches (90 cm) (IDF, 2007). Participants who had a stable weight (± 5) for the past six months, had basic formal education, and the ability to read and write English/ Urdu were included. The study excluded women who were pregnant, had a

childbirth/miscarriage in the last year, and had an irregular menstrual cycle in the past 6 months (Palacios et al., 2024). Additionally, participants with a major surgery unrelated to weight loss, having bariatric or liposuction surgery in the last year, and those on intermittent fasting in the last year were excluded. Moreover, individuals with specific comorbidities that may affect centripetal obesity directly or indirectly, i.e., thyroid dysfunction, hormonal problems, fatty liver disease, End Stage Renal Disease, arthritis, infertility, polycystic ovary syndrome, and all types of cancers were also excluded.

Assessment Measures

A self-constructed demographic information sheet including: age, gender, education, work status, birth order, marital status, duration of marriage, monthly family income, number of earning members, family system, and residence. Clinical information sheet included: age at onset of centripetal obesity, duration, cause and treatment of this condition, physical comorbid disease, family history of chronic condition, and medical checkups. Health Indicator sheet included: sleep hours, daily screen time, BMI, waist circumference, blood sugar level, blood pressure, cholesterol levels, breakfast/meal patterns, and any physical activity.

Wellness Belief Scale (WBS)

The Wellness Belief Scale was developed by Bishop and Yardley (2010). It is used to measure the beliefs of individuals about their signs of wellness. It has 21 items rated on a 7-point Likert scale ranging from 7 (very important) to 1 (not important at all). Items measure wellness beliefs in 3 domains: functional (ability to perform daily tasks), biomedical (absence of illness), and well-being. Each domain has 7 items. It has high internal consistency with Cronbach's alpha for domains: functional domain .94, biomedical .91, and for well-being .90 (Bishop & Yardley, 2010).

Adolescent Food Habit Checklist (AFHC)- Urdu Version

The Adolescent Food Habit Checklist (AFHC) original scale was developed by Johnson et al. (2002). It was translated into Urdu by Kamran and Anjum (2023). It is a self-report questionnaire and has 23 items related to food and nutritional habits. Response options of items are either true or false, and some items have an additional option of never having eaten that particular food. 1 point will be given to each healthy response on items. The higher the

score, the healthier the food habits will be. AFHC has high internal consistency with Cronbach's alpha of .82 (Johnson et al., 2002).

Appearance Schemas Inventory- Urdu Version

The Appearance Schemas scale was developed by Clark and Tiggemann (2006). It is translated and validated on adults in Urdu by Hajra et al. (2023). It has 8 items rated on a 0-2 point Likert scale ranging from 0 (No), 1 (Sometimes), and 2 (Yes). Its items focused on one's appearance, and the score ranged from 0 to 16. The higher the score higher the levels of appearance schemas. It has good internal consistency with Cronbach's alpha of .80 for the composite score of the scale (Clark & Tiggemann, 2006).

Procedure

Initially, the permission was sought from the institution authorities, the authors of assessment measures used for the study, and from where the data was collected. Before starting data collection, the study underwent an ethical review by the Institutional Review Board (IRB) or ethics committee. After that, data collection started. The schedule was as follows: a pilot study was carried out in winter (December 2024), in which 10 participants were included to check participants' feasibility and understanding of questionnaires.

Data collection for the main study was carried out from January-March 2025, by approaching outpatients in different bariatric surgery hospitals, weight loss clinics, fitness centers, and from the general population of Lahore. Participants were told about the aim of the study and presented with an information sheet. If they agreed to participate, they signed a consent form. Their participation was completely voluntary, and they were assured confidentiality of their data and the right to withdraw at any point. Participants were screened for inclusion and exclusion criteria through screening questions (with answer yes/no), which were asked during recruitment. According to their reporting, those who met study criteria were proceeded further for the study, and no reward was given against participation. The measures included self-report standardized questionnaires, a socio-demographic sheet, clinical factors, and a health indicator sheet. On average, participants take around 15-20 minutes to complete it. Data was collected in the presence of their family members as per their choice. As it was a cross-sectional research, assessment for each participant was done in a single session. A total of 149 participants' data were collected, out of which 9 were excluded due to their incomplete information, and the remaining (N=140) were retained for the study. The

researcher remained present throughout the data collection process to address any questions or provide clarification if requested by the participant. After data completion, analysis was done using SPSS, and the results are reported accurately.

Ethical Considerations

All the ethical guidelines laid by the American Psychological Association (APA) were dually followed. Furthermore, the participants were assured that their information would be held confidential and would only be used for research purposes, and the study posed no harm to them.

Results

The descriptive research study was conducted, and it was primarily concerned with describing the distribution of each demographic, clinical, and health factor across health beliefs, food habits, and appearance schemas. The nature of the sample is followed by descriptive statistics, correlations, cross-tabs, and analysis of differences by t-test, ANOVA across study variables. Hierarchical regression was also run to determine demographic predictors for a dependent variable.

Table 1 Psychometric Properties of Study Variables (N = 140)

Scale	*K*	*M*	*SD*	*α*	Range		Skewness	Kurtosis
					Actual	Potential		
Wellness Beliefs	21	-	-	-	-	-	-	-
Functional	7	31.92	9.48	.86	8-48	7-49	-0.34	-0.73
Biomedical	7	34.65	8.22	.80	7-49	7-49	-0.68	0.60
Wellbeing	7	31.85	7.86	.78	10-49	7-49	-0.45	-0.46
Food Habit Checklist	23	13.16	5.18	.75	0-22	0-23	-.003	-0.46

Appearance Schemas Inventory	8	9.30	3.40	.71	0-16	0-16	-0.56	-0.28

Note. M = Mean, *SD* = Standard Deviation, *K* = Number of items, *N* = No. of Items, α=Cronbach's Alpha.

Table 1 shows the reliabilities of scales used for the study, and the internal consistency value (α) ranged from .71 to .86, indicating excellent and acceptable reliability ranges. It also revealed that most of the individuals with centripetal obesity reported moderate importance to functional beliefs (M=31.92, S.D=9.48), biomedical beliefs (M=34.65, S.D=8.22), wellbeing beliefs (M=31.85, S.D=7.86), had healthy food habits (M=13.16, S.D=5.18), and were highly concerned about appearance schemas (M=9.30, S.D=3.40). Skewness and Kurtosis values are within an acceptable range (±1), supporting the parametric test assumption of normality.

Table 2 Demographic, Clinical, and Health Characteristics of Participants (N = 140)

Demographic variables	*f*	(%)
Gender		
Men	45	32.1
Women	95	67.9
Education		
Intermediate	48	34.3
Graduated	69	49.3
Post Graduated	23	16.4
Work Status		
Working	85	60.7
Non-working	55	39.3
Marital Status		
Married	98	70.0
Unmarried	42	30.0
Family System		
Nuclear	101	72.1
Extended	18	12.9
Joint	21	15.0
Monthly Family Income		
> 50 K	22	15.7

50K- >2 Lac	61	43.6
≥ 2 Lac	57	40.7
Residence		
Urban	117	83.6
Rural	23	16.4
Family History of Obesity		
Yes	55	39.3
No	85	60.7
Family History of Medical Illness		
Yes	51	36.4
No	89	63.6
BMI		
Class I Obesity	77	55
Class II Obesity	42	30
Class III Obesity	21	15

Note. *f* = Frequency, % = Percentage, *N* = Number of Participants, BMI = Body Mass Index.

Table 2 shows demographic, clinical, and health characteristics of participants. The age range of participants in the study was 19-58 years. Other demographic factors, including birth order (35%), were firstborn, middle-born (45%), and youngest/ only child (17.9%). While other clinical/ health factors highlighted that the majority of the individuals have centripetal obesity due to unhealthy diet/fast food (26.4%), and others have it due to family history (25.7%), pregnancies (12.1%), and sedentary lifestyles (22.9%). Most of the participants have not undergone any treatment for this condition (80%), and comorbid conditions majorly include: hypertension (17.9%), diabetes (15.0%), and cardiovascular diseases (8.6%). The majority does not have a family history of obesity (60.7%), and most of the individuals sometimes had a medical checkup 53.6%. The majority of the participants sleep < 7 hours/day (49.3%), belong to class I obesity (55%), and had intake of fried items in their breakfast (26.4%), and some participants skipped 3 meals/day (24.3%), and those do not engage themselves in regular physical activity/ exercises (62.1%).

Table 3 Pearson Correlation Matrix of Study Variables (*N* =140)

Variables	1	2	3	4	5
1	--	.21*	.71***	-.06	-.17*
2		-	.23**	-.08	.06
3			-	.03	-.13
4				-	.06
5					-

Note. 1 = Functional Beliefs, 2 = Biomedical Beliefs; 3 = Wellbeing Beliefs; 4 = Food Habit Checklist; 5 = Appearance Schemas; *p < .05, p <.001.

Table 3 shows the correlation of study variables and results suggest that functional beliefs of health had a significant negative relationship with appearance schemas (p<.05, r = -.17), indicating that those who believe doing daily tasks is an indicator of health are less likely they are to focus on their appearance schemas.

Table 4 Correlation Matrix of Demographic, Clinical, and Health Factors with Study Variables (*N* =140)

Variables	***M***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**
Age	38.60	10.79	--	.03	.04	.02	.35***	.10
Salary	75741	123841	--	.20*	-.02	.06	.01	-.14
Duration of Marriage	11.91	10.78	--	.05	.01	.05	.29***	.08
Age at Onset [a]	26.25	10.81	--	.19*	.05	.17*	.29***	.05
Duration of CO	12.68	9.35	--	-.20*	.04	-.21*	.04	.09
Screen Time/ Day	5.08	1.93	--	-.25**	-.005	-.21**	.03	.42***
BMI	35.59	5.01	--	-.21*	-.02	-.26**	-.01	.26**
WC	47.67	9.07	--	-.18*	-.13	-.17*	-.09	.12

Note. 1= Variables, 2 = Functional Beliefs; 3 =Biomedical Beliefs; 4 =Wellbeing Beliefs; 5 = Food Habit Checklist; 6 = Appearance Schemas Inventory, BMI= Body Mass Index, WC= Waist Circumference, CO= Centripetal Obesity, [a]= Age at onset of obesity, *p< .05, **p<.01, ***p<.001.

Table 4 shows the correlation of socio-demographics, and results indicate that the higher the age, duration of marriage, and age at onset of obesity, the more likely they were to have healthy food habits. Additionally, the higher the salary, the age at onset of obesity, the more they will believe that being functionally active and mentally strong (wellbeing) are indicators of health. The duration of obesity, daily screen time, BMI, and waist circumference had negative relationships with functional and well-being beliefs of health. Moreover, the higher the screen time and BMI, the more concerned they were about appearance schemas.

Table 5 Independent Sample t-test across Study Variables (*N* =140)

	Men		Women				
Variables	*M*	*SD*	*M*	*SD*	*t* (138)	*p*	Cohen's *d*
FB	32.08	8.51	31.84	9.95	.14	.88	.02
BB	35.31	7.38	34.33	8.61	.65	.51	.12
WB	32.46	7.45	31.55	8.07	.63	.52	.11
FHC	12.70	4.75	13.37	5.38	-.71	.47	.13
ASI	8.46	3.42	9.69	3.34	-.2.01	.04*	.36
	Working		Non-working				
FB	32.95	9.78	30.32	8.85	1.60	.11	.28
BB	34.70	8.10	34.56	8.48	.10	.92	.01
WB	32.76	7.99	30.43	7.51	1.72	.08	.30
FHC	14.18	4.67	11.57	5.57	2.99	.003**	.50
ASI	9.14	3.12	9.54	3.81	-.68	.49	.11
	Married		Unmarried				
FB	32.16	10.02	31.35	8.16	-.45	.64	.08
BB	34.82	8.45	34.23	7.75	-.38	.70	.07
WB	32.09	8.14	31.28	7.23	-.55	.58	.10

FHC	14.03	4.48	11.12	6.12	-3.31	.002**	.54
ASI	9.36	3.39	9.14	3.47	.35	.72	.06
	Comorbid Condition		No Comorbid Condition				
FB	30.86	9.74	33.23	9.09	-1.06	.11	.25
BB	34.77	7.75	34.51	8.74	.18	.85	.03
WB	30.26	7.38	33.52	8.06	-2.51	.01*	.42
FHC	13.50	4.54	12.79	5.79	.81	.41	.13
ASI	9.56	3.43	9.01	3.38	.96	.33	.16
	Genetic Obesity		No Genetic Obesity				
FB	29.92	8.96	33.21	9.64	-2.02	.04*	.35
BB	34.41	8.24	34.80	8.25	-.26	.79	.04
WB	30.23	7.58	33.37	9.18	-2.11	.05	.37
FHC	12.94	5.20	13.30	5.20	-.39	.69	.06
ASI	9.49	3.63	9.17	3.27	.53	.59	.09

Note. M = Mean, *SD* = Standard Deviation, FB = Functional beliefs, BB = Biomedical beliefs, WB = Well-being beliefs, FHC = Food Habit Checklist, ASI = Appearance schemas inventory, *$p < .05$, **$p < .01$, ***$p < .001$.

Table 5 shows group differences across demographics, clinical, and health factors of participants. Demographic differences showed that women were more concerned about appearance than men, working participants had better food habits than non-working participants, and married individuals had better food habits than unmarried individuals. Clinical differences showed that people who had not undergone any treatment reported more importance to functional beliefs than those who had undergone any treatment. Individuals with no comorbid condition reported higher well-being beliefs than those who have a comorbid condition. Health factors differences showed that individuals who do not take 3 meals/day reported higher well-being beliefs than those who

take three meals/ day. However, across other variables, there were no significant mean differences.

Table 6 One-Way ANOVA Differences across Study Variables (N =140)

Variable	Factor	Group	*M(SD)*	*F*(*df*)	η^2	Post Hoc
FB	Education	Intermediate	28.06 (9.51)	6.68** (2,137)	08	2>3>1
		Graduated	34.23 (8.93)			
		Post-Graduated	33.04 (8.84)			
WB	Education	Intermediate	29.12 (7.83)	4.61* (2,137)	.06	3>2>1
		Graduated	3.23 (7.62)			
		Post-Graduated	33.39 (7.43)			
FB	Birth Order	First Born	33.63 (9.24)	4.35* (2, 137)	05	1>2>3
		Middle Born	32.60 (9.71)			
		Youngest/Only Child	27.39 (8.18)			
WB	Birth Order	First Born	33.02 (7.88)	6.24**(2, 137)	08	1>2>3
		Middle Born	32.95 (7.48)			
		Youngest/Only Child	27.32 (7.26)			
FHC	Birth Order	First Born	11.81 4.85	4.97** (2, 137)	.06	2>3>1
		Middle Born	14.63 4.71			
		Youngest/Only Child	12.18 6.00			
ASI	Family Income	> 50 k	11.36 (3.18)	5.43** (2,137)	.07	1>3>2
		50k-2 Lac	8.67 (3.33)			
		> 2 Lac	9.17 (3.31)			
BB	Family System	Nuclear	34.95 (7.98)	3.73* (2, 137)	.05	2>1>3
		Extended	37.55 (7.49)			
		Joint	30.71 (8.88)			

FHC	Family System	Nuclear	12.70 (5.20)	3.43* (2, 137)	.04	2>3>1
		Extended	16.09 (4.29)			
		Joint	12.85 (5.20)			
		Medical Conditions	13.02 (3.61)			
FB	Sleep Quality	Poor	33.66 (11.43)	6.26** (2, 137)	.08	2>1>3
		Good	34.21 (8.99)			
		Excellent	28.52 (8.66)			
WB	Sleep Quality	Poor	30.66 (8.30)	4.45** (2, 137)	.09	2>1>3
		Good	34.27 (7.68)			
		Excellent	29.09 (7.08)			
ASI	BMI	Class I Obesity	8.58 (3.08)	4.74* (2, 137)	.06	3>2>1
		Class II Obesity	9.80 (3.39)			
		Class III Obesity	10.90 (3.94)			
FHC	Sugar Levels	Normal	13.98 (4.91)	5.80** (2, 137)	.05	2>1>3
		High	15.06 (2.77)			
		No Checkup	11.73 (5.65)			
FB	B.P Levels	Normal	32.00 (8.76)	3.27* (2, 137)	.05	3>1>2
		High	28.14 (11.51)			
		No Checkup	34.30 (8.53)			
WB	B.P Levels	Normal	32.07 (7.66)	4.09* (2,137)	.05	3>1>2
		High	28.42 (9.33)			
		No Checkup	34.76 (6.44)			
ASI	B.P Levels	Normal	9.80 (3.26)	5.24** (2,137)	.07	2>1>3
		High	10.10 (3.72)			
		No Checkup	7.92 (3.07)			

Note. M = Mean, *SD* = Standard Deviation, FB = Functional beliefs, BB = Biomedical beliefs, WB = Well-being beliefs, FHC = Food Habit Checklist, ASI = Appearance schemas inventory, CO= Centripetal Obesity, B.P= Blood Pressure, **p* < .05, ***p* <.01, ****p* <.001.

Table 6 shows group differences by ANOVA across demographics, clinical, and health factors of participants. Demographic differences showed that individuals with a graduation reported significantly more importance to functional beliefs as compared to other education groups. Individuals with post-graduation reported significantly higher importance to wellbeing beliefs as compared to those with lower education. Firstborn individuals reported higher functional and well-being beliefs, as compared to middle and youngest/only child groups. Middle-born individuals had significantly healthier food habits as compared to their counterparts. Individuals with a monthly family income > 50k reported more concern towards appearance schemas as compared to others. Individuals with an extended family system reported high biomedical beliefs, healthy food habits, and a nuclear family system reported less biomedical beliefs and unhealthy food habits across all groups. Good sleep quality individuals reported high functional and well-being beliefs. Class I obesity individuals reported high well-being beliefs, and class III obesity individuals reported more concern towards their appearance. Individuals with high sugar levels had healthy food habits, while individuals with high blood pressure were highly concerned about appearance. However, no significant results were found across other variables.

Table 7 Cross Tabulation of BMI and Study Variables (N =140)

	BMI			
Study Variables	Categories	*f* (%)	$\chi^2(4)$	*p*
Functional Beliefs	Low Importance	20 (14.3%)	8.36	.07
	Moderate Importance	61 (43.6%)		
	High Importance	59 (42.1%)		
Biomedical Beliefs	Low Importance	6 (6.3%)	10.31	.03*
	Moderate Importance	67 (47.9%)		

	High Importance	67 (47.9%)		
Wellbeing Beliefs	Low Importance	7 (5.0%)	12.63	.01*
	Moderate Importance	86 (61.4%)		
	High Importance	47 (33.6%)		
Food Habits	Unhealthy Eating Habits	21 (15.0%)	6.41	.17
	Moderately Healthy	55 (39.3%)		
	Healthy Eating Habits	64 (45.7%)		
Appearance Schemas	Less Concerned	21 (15.0%)	6.35	.17
	Moderately Concerned	53 (37.9%)		
	Highly Concerned	66 (47.1%)		

Note. f = Frequency, χ^2= Chi Square Value, BMI= Body Mass Index, *$p < .05$.

Table 7 shows the total scores of cross-tabulation analysis across Body Mass Index (BMI) classes and all study variables, which revealed that most of the individuals with centripetal obesity reported moderate importance to health beliefs i.e: functional (43.6%); biomedical (47.9%); well-being (61.4%), had healthy food habits (45.7%), and were highly concerns towards appearance schemas (47.1%).

Table 8 Hierarchical Regression Analysis to Establish Predictors of Appearance Schemas (N=140)

Variable	**Model 1**			**Model 2**		
	B	*β*	*SE*	*B*	*β*	*SE*
Constant	2.13		2.54	2.52		3.12
Age	.03	.09	.03	.03	.110	.03

Gender	.91	.12	.63	1.0	.14	.62
Marital Status	.18	.02	.82	.17	.02	.81
Monthly Family Income	-.003*	-.18	.000	-.003*	-.19	.000
Duration of CO[a]	-.008	-.02	.03	-.02	-.06	.03
BMI	.13*	.21	.06	.11	.17	.06
Functional Beliefs				-.06	-.18	.04
Biomedical Beliefs				.05	.12	.03
Wellbeing Beliefs				.01	.02	.05
Food Habits				.01	.12	.05
R^2	.12			.16		
ΔR^2				.035		
F	.006**			.01*		

Note. *p<.05, **p<.01, [a] CO = Centripetal Obesity, BMI= Body Mass Index.

Table 8 shows that in Model 1, monthly family income and BMI were significant predictors, while age, gender, marital status, and duration of centripetal obesity were non-significant. This model explained 12% of the variance in the appearance schemas. Model 1 was significant, F (6, 133) = 3.15, p<.01, indicating that predictors explained a significant amount of variance in appearance schemas. In Model 2, health beliefs and food habits were added as predictors. Monthly family income remained a significant predictor, while age, gender, marital status, duration of obesity, and BMI were not significant. Model 2 explained 16 % of the variance in the appearance schemas. This model was significant, F (10, 129) = 2.45, p<.05, indicating that predictors explained a significant amount of variance in appearance schemas. In sum, monthly family income is the only negative predictor of appearance schemas in both models, which indicates that the lower the family income, the more they will be concerned about appearance schemas. The addition of health beliefs and food habits in Model 2 only improved the variance of the model.

Discussion

The outcomes of a descriptive cross-sectional study revealed that most participants reported moderate importance to health beliefs, had healthy eating habits, and were highly concerned about their appearance schemas, consistent with a previous study (Malverdy & Kazemi, 2016). Health beliefs mean individuals attributed moderated importance to all factors, whether it's functional (the ability to carry out daily tasks and activities), biomedical (they consider importance to absence to illness beliefs), or wellbeing (ability to maintain a life in balance). Individuals reported to have centripetal obesity due to unhealthy food, but currently, overall, they had healthy food habits, which indicated that they had learned from their treatment and started following healthy lifestyle choices. Overall, individuals were highly concerned about appearance schemas, which highlighted the factor of stigmatization towards these individuals, as they are being influenced by the demands of our society.

Demographic factors distribution across age showed that centripetal obesity was more prevalent in middle-aged adults (Chen et al., 2021), which might be due to less physical activity due to over responsibilities in their life, they could not manage it. Age is also positively associated with food habits, indicating that higher age leads individuals to adopt healthy food habits (Weston et al., 2020). Gender differences highlighted that centripetal obesity is more prevalent in women, and they were highly concerned about their appearance schemas (Prasad et al., 2020). Sociocultural impact of society that women should have a slim body to be acceptable in our Pakistani society has increased women standards to be consistent with them (Owen et al., 2013). The majority of young adults had unhealthy dietary patterns due to the societal impact of social media and advertisements portraying unhealthy food as a major demand in Pakistan (Ain et al., 2024). According to previous studies, there can be differences in health-related beliefs in working and non-working individuals, because work affects our health differently, but no significant results were seen in the study, which may reflect low variability across variables. While the higher the qualification of individuals, the more individuals reported importance to health beliefs, consistent with previous studies, education has an impact on health beliefs (Menor et al., 2022).

Birth order differences revealed that the middle-born had healthy eating habits, and the youngest/only child had unhealthy eating habits (Black et al., 2016). Centripetal obesity was found to be more prevalent in married individuals because many women gain weight after pregnancy, and there is no

coming back due to no physical exercises/ busy routines. (Nikolic et al., 2020); also, they had healthy eating habits and were highly concerned about their appearance. Higher family income individuals are less likely to be concerned about their appearance schemas, which might be because they can afford treatment and meet society's standards. They also reported healthy eating habits due to the affordability of expensive fruits, and had healthy dietary patterns (Alaimo et al., 2017). Across the family system, extended family system individuals reported high importance to biomedical beliefs (absence of illness), and had healthy eating habits, which reflect a sociocultural impact of parents' beliefs and cultural traditions ongoing from generation to generation (Liu et al., 2023).

Clinical factors distribution in centripetal obese individuals revealed that the prevalence of centripetal obesity onset was found in adults, because at a young age, people are prone to eating fast/oily foods to meet societal demands, and surprisingly, in the study majority of the individuals had centripetal obesity due to the intake of an unhealthy diet (Livingstone & Pourshahidi, 2014). Centripetal obese individuals also reported having comorbid conditions, especially hypertension, diabetes, cardiovascular diseases, joint/knee pain issues, etc which may highlight the severity of centripetal obesity (Taurio et al., 2023).

Health indicators shockingly revealed that the majority of the participants had a sleep schedule of less than 7 hours/day, and the previous studies showed that sleep deprivation is a major risk factor for obesity (Keramat et al., 2023). Individuals who had higher screen time were highly concerned about their appearance schemas, which indicated the sociocultural impact of social media portraying a slim body as ideal, whether in advertisements, dramas, movies, or any type of campaigns (Abbasi et al., 2024). It all put a social pressure on obese individuals to have negative self-schemas related to their body and it can lead to psychological issues in these individuals. Across BMI (Body Mass Index), the individuals with class III obesity were highly concerned about their appearance, which highlighted the impact of stigmatization on obese individuals (Moufawad et al., 2023). However, sociocultural influence of familial dietary patterns/choices, portion sizes, religious factors, emotional and psychological factors, and traditional dietary patterns can influence the overall health beliefs, dietary habits, and appearance-related schemas of individuals (Ludwig et al., 2011).

Conclusion

The current descriptive research was done to examine health-related behaviors, including health beliefs and food habits, which had a psychological impact on influencing appearance schemas in centripetal obese individuals. This study further identified how individuals with diverse socio-demographics, clinical, and health indicators differ across health beliefs, food habits, and appearance schemas. The findings of the study were consistent with the previous studies, as centripetal obesity was most prevalent in middle-aged adults, females, and the majority reported having it due to unhealthy diet intake and family history. Sociocultural factors like stigmatization of obesity, beauty/slim body ideals, media exposure, lifestyle changes, and familial dietary patterns had also influenced their perceptions about health, eating habits, and appearance schemas.

Limitations

The study, being a descriptive-cross-sectional study, is unable to establish the direction or timing of relationships, making it difficult to determine which variable influences the other. There is a possibility of social desirability bias, which can influence how participants respond to questions. As these individuals are being stigmatized in our society, participants may feel embracement/ashamed, which might have resulted in socially acceptable responses on the questionnaires. Participants may rely on their memory to report past behaviors or experiences. There is a chance of selection bias, as the characteristics or behaviors of the participants may not be representative of the entire target population. Variations in participant demographics could have influenced responses, potentially affecting the consistency and generalizability of results. Since participants were from different socioeconomic backgrounds, this might influence the study and make it difficult to compare health beliefs, food habits, and appearance schemas in these individuals. The data collected from hospitals may have affected participants' responses due to time constraints during their medical checkup. Lastly, the study did not account for all possible confounding factors that might influence the distribution of health beliefs, food habits, and appearance schemas.

Implications, Suggestion

The study can help health care providers to identify health beliefs, food habits, and appearance schemas to design a specific weight management and

nutritional program for a centripetal obese individual. It can also help dieticians, gym trainers, bariatric surgeons, and psychologists, to encourage sustainable lifestyle changes, promote healthy eating patterns, body image awareness, and recommend diet plans by considering family income so that everyone can afford it. The study can offer valuable insights into a population of centripetal obese and lay the foundations for future research using experimental or longitudinal studies. The study can be a useful research tool in many areas of health research, including public health campaigns to reduce appearance stigmatization and the role of media in portraying beauty ideals. By learning about what is going on in a specific population of centripetal obese, researchers can improve their understanding of how centripetal obese individuals tend to differ in their health beliefs, food habits, and appearance schemas across diverse sociodemographic, clinical, and health factors.

The present study can be a contribution to filling a knowledge gap, but future research should explore the effectiveness of any therapeutic interventions in improving health beliefs, food habits, and negative appearance schemas with the help of experiments. However, a longitudinal study can help in assessing the long-term impact of these study variables in centripetal obese individuals across different life stages. The impact of familial traditions, media exposure, and peer pressure on these variables can help researchers find in-depth detail on how these sociocultural factors influence the perceptions of individuals.

Participant Consent: The authors confirm that Informed consent was obtained from all participants, and confidentiality was duly maintained.

Data Fabrication/Falsification Statement: The author(s) declare that no data have been fabricated, falsified, or manipulated in this study.

References

Abbasi, M. M. H., Khan, F., & Khan, M. (2024). Effects of negative body images on social media among youth in Pakistan. *Pakistan Social Sciences Review, 8*(1), 333–345. https://doi.org/10.35484/pssr.2024(8-I)30

Ain, S., Ali, S., & Gohar, Z. (2024). Impact of social media on eating habits and exercising behavior. *International Journal of Linguistics Applied Psychology and Technology (IJLAPT), 1*, 1–20. https://doi.org/10.69889/ijlapt.v1i05.58

Al Riyami, S. Al Hadabi, M.A. Abd El Aty, H. Al Kharusi, M. Morsi1 and S. Jaju. (2010). Nutrition knowledge, beliefs, and dietary habits among elderly people in Nizwa, Oman: implications for policy, 16(8). https://www.emro.who.int/emhj-volume-16-2010/volume-16-issue-8/article-07.html

Alaimo K, Olson CM, Frongillo EA. Low Family Income and Food Insufficiency in Relation to Overweight in US Children: Is There a Paradox? *Arch Pediatr Adolesc Med.* 2001;155 (10):1161–1167. doi:10.1001/archpedi.155.10.1161

Basit, A., Askari, S., Zafar, J., Riaz, M., Fawwad, A., & Members, N. D. S. P. (2021). NDSP 06: Prevalence and risk factors for obesity in urban and rural areas of Pakistan: A study from second National Diabetes Survey of Pakistan (NDSP), 2016–2017. *Obesity Research & Clinical Practice*, *15*(1), 19-25.

Bishop, F., & Yardley, L. (2010). The development and initial validation of a new measure of lay definitions of health: The Wellness Beliefs Scale. Psychology & Health, 25(3), 271–287. https://scales.arabpsychology.com/s/wellness-beliefs-scale-wbs/

Black, S. E., Devereux, P. J., & Salvanes, K. G. (2016). Healthy(?), wealthy, and wise: Birth order and adult health. *Economics & Human Biology, 23*, 27–45. https://doi.org/10.1016/j.ehb.2016.06.005

Cairo B. Ntimana, Solomon S. R. Choma (2023). Modifiable determinants of central obesity among the rural black population in the DIMAMO HDSS, Limpopo, South Africa. *Public Health and Nutrition*. https://doi.org/10.3389/fpubh.2023.1165662

Chen, X., Duan, M., Hou, R., Zheng, M., Li, H., Singh, M., Li, C., Liu, K., Zhang, F., Yang, X., Luo, Y., He, Y., Wu, L., & Zheng, D. (2021). Prevalence of abdominal obesity in Chinese middle-aged and older adults with a normal body mass index and its association with type 2 diabetes mellitus. *Diabetes, Metabolic Syndrome and Obesity, 14*, 4829–4841. https://doi.org/10.2147/DMSO.S339066

Clark, L. S., & Tiggemann, M. (2006). Appearance culture in 9- to 12-year-old girls: Media and peer influences on body dissatisfaction. Social

Development, 15, 628–643. https://pubmed.ncbi.nlm.nih.gov/17206883/

Deepa M, Farooq S, Deepa R, Manjula D, Mohan V. (2010). Prevalence and significance of generalized and central body obesity in an urban Asian Indian population in Chennai, India. *Eur J Clin Nutr*, 63(2), 259-67. https://pubmed.ncbi.nlm.nih.gov/17928807/

Hajra, Kamran, & Anjum (2023). Appearance Schemas Inventory Urdu Version, *Institute of Applied Psychology*, University of the Punjab, Lahore.

International Diabetes Federation (IDF). (2007). Metabolic Syndrome in Children and Adolescents. https://idf.org/media/uploads/2023/05/attachments-30.pdf

Irfan, F. M., Irfan, F. M., Rehman, S. ur, Faiz, A., Afzal, M., & Ahmed, M. (2024). Eating habits and lifestyle practices of young adults in Karachi, Pakistan: A cross-sectional survey. *Journal of Nutritional and Food Sciences, 5*(2). https://doi.org/10.54393/df.v5i2.129.

Jacob, J.S., Panwar, N. (2023). Effect of age and gender on dietary patterns, mindful eating, body image, and confidence. *BMC Psychol* 11, 264. https://doi.org/10.1186/s40359-023-01290-4

Johnson, F, Wardle, J, & Griffith, J. (2002). The Adolescent Food Habits Checklist: reliability and validity of a measure of healthy eating behaviour in adolescents, *European Journal of Clinical Nutrition*, 56, 644-649. https://pubmed.ncbi.nlm.nih.gov/12080404/

Kamran & Anjum. (2023). Adolescents' Food Habits Checklist. *Institute of Applied Psychology*, University of the Punjab, Lahore.

Keery, H., van den Berg, P., & Thompson, J. K. (2004). An evaluation of the Tripartite Influence Model of body dissatisfaction and eating disturbance with adolescent girls. *Body Image, 1*(3), 237–251. https://doi.org/10.1016/j.bodyim.2004.03.001

Keramat, S. A., Alam, K., Basri, R., Siddika, F., Siddiqui, Z. H., Okyere, J., Seidu, A.-A., & Ahinkorah, B. O. (2023). Sleep duration, sleep quality, and the risk of being obese: Evidence from the Australian panel survey. *Sleep Medicine, 109*, 56–64. https://doi.org/10.1016/j.sleep.2023.06.012

Khamseh, M. E., Emami, Z., Iranpour, A., Mahmoodian, R., Amouei, E., Tizmaghz, A., Moradi, Y., & Baradaran, H. R. (2023). Attitude and belief of healthcare professionals towards effective obesity care and

perception of barriers: An updated systematic review and meta-analysis. *Archives of Iranian Medicine, 26*(9), 529–541. https://doi.org/10.18502/aim.v26i9.13206

Levina Clark & Marika Tiggemann (2007) Sociocultural Influences and Body Image in 9 to 12 Year-Old Girls: The Role of Appearance Schemas, Journal of Clinical Child & Adolescent Psychology, 36:1, 76-86. DOI: 10.1080/15374410709336570

Liu, K., Zhang, J., Liu, S., Chen, J., Zhang, Y., Li, W., Fu, H., & Fu, L. (2023). Parental stress on children's appearance, body dissatisfaction, and eating behaviours in Chinese children: A pathway analysis. *Psychology Research and Behavior Management, 16*, 363–372. https://doi.org/10.2147/PRBM.S395628

Livingstone MB, Pourshahidi LK. (2014). Portion size and obesity, 5(6), 829-34. https://www.sciencedirect.com/science/article/pii/S2161831322006123

Ludwig, A. F., Cox, P., & Ellahi, B. (2011). Social and cultural construction of obesity among Pakistani Muslim women in North West England. *Public Health Nutrition, 14*(10), 1842–1850. https://doi.org/10.1017/S1368980010003472

Malverdy, Z., & Kazemi, A. (2016). Health beliefs and stages of change to improve behaviors among obese and overweight women undergoing preconception care. *Iranian Journal of Nursing and Midwifery Research, 21*(6), 595–600. https://doi.org/10.4103/1735-9066.197677

Menor-Rodriguez, M. J., Cortés-Martín, J., Rodríguez-Blanque, R., Tovar-Gálvez, M. I., Aguilar-Cordero, M. J., & Sánchez-García, J. C. (2022). Influence of an educational intervention on eating habits in school-aged children. *Children (Basel), 9*(4), 574. https://pmc.ncbi.nlm.nih.gov/articles/PMC9028132/

Moufawad, M., Hoque, A., Kells, M., et al. (2024). Social media use and weight bias internalization: Association moderated by age and weight perception. *Journal of Eating Disorders, 12*, Article 84. https://doi.org/10.1186/s40337-024-01043-7

Nikolic Turnic T, Jakovljevic V, Strizhkova Z, Polukhin N, Ryaboy D, Kartashova M, Korenkova M, Kolchina V, Reshetnikov V. (2024). The Association between Marital Status and Obesity: A Systematic Review and Meta-Analysis. *Diseases*. 12(7), 146. https://doi.org/10.3390/diseases12070146

Owen, R., & Spencer, R. M. C. (2013). Body ideals in women after viewing images of typical and healthy weight models. *Body Image, 10*(4), 489–494. https://doi.org/10.1016/j.bodyim.2013.04.005

Palacios, S., Chedraui, P., Sánchez-Borrego, R., Coronado, P., & Nappi, R. E. (2024). Obesity and menopause. *Gynecological Endocrinology*, *40*(1). https://doi.org/10.1080/09513590.2024.2312885

Prasad DS, Kabir Z, Revathi Devi K, Peter PS, Das BC. (2020). Age-related changes of body composition and abdominal adipose tissue assessed by bio-electrical impedance analysis and computed tomography. *Indian Heart J*, 72(3), 202-204. https://pubmed.ncbi.nlm.nih.gov/21963534/

Sedibe, M. H., Pisa, P. T., Feeley, A. B., Pedro, T. M., Kahn, K., & Norris, S. A. (2018). Dietary habits and eating practices and their association with overweight and obesity in rural and urban Black South African adolescents. *Nutrients, 10*(2), 145. https://doi.org/10.3390/nu10020145

Taurio, J., Hautaniemi, E. J., Koskela, J. K., Kytö, V., & Nieminen, M. S. (2023). The characteristics of elevated blood pressure in abdominal obesity correspond to primary hypertension: A cross-sectional study. *BMC Cardiovascular Disorders, 23*, 161. https://doi.org/10.1186/s12872-023-03150-w

Weston, S. J., Edmonds, G. W., & Hill, P. L. (2020). Personality traits predict dietary habits in middle-to-older adults. *Psychology, Health & Medicine, 25*(3), 379–387. https://doi.org/10.1080/13548506.2019.1687918

World Health Organization (WHO). (2018). Obesity and overweight. www.wpro.who.int/mediacentre/factsheets/obesity/en.

World Health Organization WHO. (2008). Waist Circumference and Waist–Hip Ratio. *Report of a WHO Expert Consultation,* 47. https://www.who.int/publications/i/item/9789241501491

World Health Organization. (2010). *A healthy lifestyle - WHO recommendations.* https://www.who.int/europe/news-room/fact-sheets/item/a-healthy-lifestyle---who-recommendations

World Health Organization. (2022). Ageing and health. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health.