Association Between KAP and CVD Risk Variables: A Comparative Study Among Young Adults of Bengali Hindu and Bhumij of North 24 Parganas, West Bengal, India

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Abstract: *Background:* Cardiovascular disease (CVD), as a silent killer, has escalated in prevalence worldwide. Due to a multifactorial phenotype, all factors should be considered. Apart from many other psychological and physiological factors, the knowledge, attitude, and practice (KAP) have been highlighted as a significant driver of cardiovascular health. Various studies have highlighted the weightage of the KAP in addressing CVD risk factors. Therefore, this study tried to examine the KAP in different ethnic and co-inhabited settings to underscore the link between extrinsic components with respect to CVD risk variables. *Methods:* This cross-sectional study among young adults (age group 18-35 years) was designed because of their rapidly changing lifestyle behaviours. Both male and female participants were selected on the basis of inclusion and exclusion criteria. The anthropometric, fasting lipid profile and data on KAP addressing cardiometabolic health were collected using proper technique and methods. Apart from the normality check of the variables, Cronbach-alpha (validity measure), Descriptive and inferential statistics were performed to address the objectives. *Results:* The mean KAP among different sexes and ethnic groups was found to be significant. The KAP scores among females were quite

higher than those of their male counterparts. No association were observed between knowledge and practice. *Conclusion:* The study underscores the positive effect of KAP on cardiometabolic health. A significant gap between knowledge and practice, irrespective of sex and ethnicity, was noticed. Further research and awareness initiatives are necessary, as even individuals possessing adequate knowledge demonstrate practice scores that fall within poor categories.

Keywords: KAP, lipid profile, CVD risk factors, ethnicity.

Introduction

Cardiovascular disease (CVD) is a multifactorial, complex ailment known as a global burden. Its escalated prevalence has been observed among all age groups, with premature mortality, earning it the designation of a "silent killer." Its multifactorial phenotype presents a problem in identifying any single cause. However, concerns regarding CVD remain unresolved until its underlying causes are addressed. CVD is responsible for 29.2% of global deaths, with the primary contributing factors being an unhealthy diet, physical inactivity, insufficient sleep, and inappropriate lifestyle choices (Oguoma et al. in 2014).

To tackle CVD-related problems, the WHO target to reduce it by 25 % by 2025 (Duber et al., 2018). Improper lifestyle has been highlighted as the root cause of premature death and CVD (Mohamud et al., 2022). The primary underlying cause of CVD is metabolic syndrome (MetS). MetS is a group of interconnected factors that disturb physiological parameters, such as hypertension, insulin resistance and abnormal lipid profiles (Mahajan et al., 2012). Additional factors include consumption of alcohol, tobacco smoking, and intake of drugs, such as sex hormones and birth control pills (Jadhav et al., 2021).

Out of multiple tools to understand the association of CVD risk factors, the KAP stand out as the most reliable and invasive tool (Koohi et al., 2021). The KAP model will facilitate understanding of the interrelationships between KAP and selected CVD risk factors by determining the gaps (Shen et al., 2017). Therefore, this study will explore KAP on cardiometabolic health among multi ethnic groups and sex, with special focus on the association between them.

Objectives

1. To compare the KAP between Bengali Hindu and Bhumij participants.

2. To explore the relationship between KAP scores and CVD risk variables for each group.

Material and Methods

Study Area

Haroa Subdivision, under the district North 24 Parganas of West Bengal in India, was considered for this study. The villages/areas were selected based on the co-inhabitation of two ethnic groups (Bhumij and Bengali Hindu). Further selection of the area was based on population distribution as directed by the local administrator and the block office.

Study design

Being a cross-sectional and observational study, it focuses on primary data collection (Sociodemographic component, Anthropometric, lipid profile). Furthermore, the KAP model has been employed among participants to analyze their KAP regarding cardiometabolic health and its associated factors.

Sampling Method

Samples were selected using random sampling methods. Sample size was calculated using N=Z2pq/d2 (Iloh et al., 2013), where the prevalence of Metabolic syndrome is 30% (Krishnamoorthy et al., 2020). After adding 10 % for sample loss, it becomes 360, which means at least 90 from each group, but the final sample was much more than this. Only young adults aged 18-35 years hailing from both communities were included. A total of 505 participants from two ethnic groups (Bengali male, 125; Bengali female, 129; Bhumij male, 124; Bhumij female, 127) were considered for this study based on the following inclusion criteria:(i) willingness to participate and (ii) with non-deformities. The exclusion criteria were as follows: (i) undergoing medication or taking drugs for hypertension, statins, etc., and (ii) pregnant or had a recent parturition (in the last six months).

Data collection

The data on sociodemographic factors like Name, age, sex, education status, marital status, etc., anthropometric measurements and lipid profile were noted. Standing height, circumference of waist (WC in cm) and hip (HC in cm), along with weight (kg) were recorded to the nearest 0.1 cm and 0.1 kg, respectively, using standard

techniques and methods (Lohman, Roche, and Martorell 1988). Standing height and circumference were measured with an anthropometric rod and a non-elastic measuring tape, respectively, whereas Karada scan (Omron HBF 375, Japan) was used for measuring weight. An aneroid sphygmomanometer was used to measure Blood Pressure (systolic and diastolic) in the sitting posture, twice with a 5-minute interval between the two measurements (Kshatriya et al., 2022). The blood was drawn using the finger-prick method and analyzed using a portable lipid analyzer (Lipidometer, SD Biosensor, South Korea). Fasting was maintained for a minimum of 8 hours. Fasting lipid parameters (in mg/dl), including total cholesterol (TC), triglyceride (TG), lipoprotein cholesterol like low-density (LDLc) and high-density (HDLc), along with fasting blood glucose (FBG) levels, were recorded.

About the schedule of the KAP model

Additionally, the pre-tested questionnaire on KAP was based on the fundamental knowledge and risk factors of Cardiometabolic health. Relevant items were derived from a literature review, pilot survey, and discussion. Initially, an extensive literature search was conducted on KAP, CVD, lifestyle, sociodemographic factors, etc., from various online databases. The questions were adapted from the literature and pre-tested in similar types of studies. This was verified by two subject experts and further tested in a pilot survey to fill any gaps and drawbacks. The Cronbach's α test was conducted on the data of 30 participants to check the reliability of the KAP questionnaire using SPSS, which yielded scores of 0.751 and 0.776 for the standardized 36 (12×3) items.

Scoring of KAP items and outcomes

There were 12 sets of statements for each domain of knowledge, attitude, and practice, resulting in a total of 36 statements. These KAP statements were thus interrelated. The answers to these questions were given as "YES", "I DON'T KNOW" and "NO" for the Knowledge part, whereas for attitude it was "Agree," "Neither Agree nor Disagree," and "Disagree" but for practice statements they were Always," "Sometimes," and "Never". The corresponding scores were "2", "1" and "0", respectively. The total score was calculated and remarks for each KAP domain were assigned as follows: "GOOD = 20-24", "SATISFACTORY = 15-19" and "POOR = 1-14" POOR every individual, similar to the scoring cut-off of Bloom's cut-off points as follows: Good = 80-100 %, Satisfactory = 60-79 %, and Poor = <60 % (Machaalani et al., 2022).

Statistical Analysis

SPSS - 27 (Statistical Package for Social Sciences) was employed for data analysis. The data were subsequently double-checked, cleaned, and verified prior to processing. Shapiro–Wilk's test was performed to check the variable's normality, and skewed data were treated with the BOX-COX transformation (Wang et al.,2018). Apart from explorative statistics, descriptive and inferential statistics were also performed according to the requirements. The mean difference was analyzed using the t-test and ANOVA (post-hoc Tukey). The associations were checked with Pearson's correlation. Multivariate analysis of variance (MANOVA) was used to analyze the impact of KAP on risk variables. The probability value of <0.05 is set for statistical significance.

Results

Table 1: General Information of Study Participants

Variable / Status	Bengali Male (N=125)	Bengali Female (N=129)	Bhumij Male (N=124)	Bhumij Female (N=127)
Age	27.46 (5.144)	28.84 (4.954)	27.24 (5.884)	27.37 (5.477)
WC	77.41 (10.500)	76.53 (12.004)	75.71 (9.467)	72.72 (9.750)
SBP	130.01 (14.308)	124.26 (15.851)	129.85 (13.639)	125.56 (15.800)
DBP	80.35 (11.188)	79.31 (11.939)	79.95.27 (11.106)	80.78 (10.996)
TC	137.88 (30.849)	132.55 (27.970)	134.85 (27.930)	145.53 (28.336)
TG	145.16 (64.007)	93.54 (39.978)	108.53 (49.263)	78.80 (38.412)
LDLc	80.28 (25.980)	76.99 (26.343)	72.73 (22.808)	86.02 (25.219)
HDLc	30.69 (8.321)	35.86 (7.894)	41.05 (10.598)	44.20 (8.770)
FBG	106.58 (16.604)	109.75 (37.595)	106.39 (18.945)	102.65 (17.425)
Education Status	**Frequency (%)**			
CNS	4 (3.2%)	12 (9.3%)	6 (4.8%)	15 (11.8%)
CS	9 (7.2%)	24 (18.6%)	4 (3.2%)	21 (16.5%)
Primary	9 (7.2%)	10 (7.8%)	17 (13.7%)	16 (12.6%)
Secondary	41 (32.8%)	58 (45.0%)	64 (51.6%)	57 (44.9%)
Higher Secondary	38 (30.4%)	17 (13.2%)	17 (13.7%)	11 (8.7%)
Graduation and above	24 (19.2%)	8 (6.2%)	16 (12.9%)	7 (5.5%)
Marital Status	**Frequency (%)**			
Married	83 (66.4%)	120 (93.0%)	72 (58.1%)	108 (85.0%)
Unmarried	41 (32.8%)	8 (6.2%)	52 (41.9%)	18 (14.2%)
Divorce	1 (0.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Widow	0 (0.0%)	1 (0.8%)	0 (0.0%)	1 (0.8%)
CNS- can't sign, CS- can sign				

Table 1 consolidates the general information of the study participants across the ethnic groups and sexes. The mean and SD of age and CVd risk factors such as WC, SBP, DBP, TC, TG, LDLc, HDLc, and FBG are provided. Education and marital status, along with frequency and percentage, indicate the distribution of participants in each category.

Table 2 shows the basic frequency distribution of the participants under each KAP total score category. Among Bengali male and female participants, 61.6% and 54.3 %, respectively, were found to have satisfactory KAP, while the rest were under poor KAP, with none under good KAP. Nearly 66.9% and 66.1 % of Bhumij males and females, respectively, fell under satisfactory KAP, while 28.2% and 21.3 % fell under poor KAP, and the rest were under good KAP.

Table 2: Frequency distribution of the participants under each category of KAP

KAP Category	Bengali Male (125)	Bengali female (129)	Bhumij Male (124)	Bhumij Female (127)	Combined KAP Score (505)
	n (%)	n (%)	n (%)	n (%)	n (%)
Poor	48 (38.4)	59 (45.7)	35 (28.2)	27 (21.3)	169 (33.5)
Satisfactory	77 (61.6)	70 (54.3)	83 (66.9)	84 (66.1)	314 (62.6)
Good			6 (4.8)	16 (12.6)	22 (4.4)

Table 3.1: Mean comparison of the Knowledge, Attitude, Practice and total KAP score among ethnic groups

	Participants	Male (125 vs 124)			Female (129 vs 127)		
		Mean	SD	t value	Mean	SD	t value
Knowledge	Bengali	18.740	2.994	0.944	17.093	3.016	0.620
	Bhumij	18.379	3.104		17.346	3.508	
Attitude	Bengali	18.880	2.388	2.9992**	17.589	2.483	6.468***
	Bhumij	19.847	2.702		19.583	2.447	
Practice	Bengali	6.832	2.917	6.304***	9.643	2.558	7.432***
	Bhumij	9.129	2.831		11.953	2.409	
KAP total score	Bengali	44.520	6.459	3.585***	44.326	6.022	5.678***
	Bhumij	47.355	6.007		48.882	6.799	
Values in parentheses indicate significance levels: **p< 0.01, ***p< 0.001							

A t-test was performed to check the mean difference in the KAP between participants of the two ethnic groups (Table 3). No significant difference was observed in knowledge between Bengali and Bhumij males, but Bhumij males had significantly higher mean values for Attitude, Practice, and even the KAP total score, indicating that due to their good attitude, their practice is good compared to their Bengali counterparts. A similar trend was observed among female counterparts. There was a gap between the mean attitude and practice scores, which was further reflected by the mean total KAP score of 72 points.

Table 3.2: Mean comparison of the Knowledge, Attitude, Practice and total KAP score among combined male and female participants

	Participants	*Male (249) vs Female (256)*		
		Mean	*SD*	*t value*
Knowledge	Male	18.562	3.048	4.776***
	Female	17.219	3.265	
Attitude	Male	19.361	2.589	3.355***
	Female	18.578	2.655	
Practice	Male	7.976	3.091	10.834***
	Female	10.789	2.737	
KAP total score	Male	45.932	6.385	1.114
	Female	46.586	6.801	
Values in parentheses indicate significance level: ***$p < 0.001$				

The mean differences in the KAP and total scores between the sexes are shown in Table 3.2. Male participants had significantly higher mean knowledge and attitude scores, while female participants had significantly higher mean practice scores compared to their counterparts.

Table 4.1: Correlation of KAP Total Scores with CVD Risk Factors among participants

KAP Total Score of	*CVD risk variables*							
	WC	*SBP*	*DBP*	*TC*	*TG*	*LDLc*	*HDLc*	*FBG*
Bengali Male	-0.179*	-0.026	-0.006	-0.192*	-0.146	-0.195*	0.061	-0.084
Bengali Female	-0.406**	-0.263**	-0.284**	-0.377**	-0.383**	-0.275**	0.114	-0.094
Bhumij Male	-0.029	-0.278**	-0.231**	-0.062	-0.030	-0.082	0.022	-0.094
Bhumij Female	-0.353**	-0.457**	-0.499**	-0.163	-0.188*	-0.199*	0.210*	-0.126
Values in parentheses indicate significance levels: *$p < 0.05$, **$p < 0.01$								

Pearson's correlation was employed to check the association between the KAP total score (KAP TS) and CVD risk variables (Table 4.1). Among all participants, KAP TS was inversely correlated, indicating that an increase in the KAP score decreased the mean of the CVD risk variables, except for HDLc, which is good. Mean blood pressure among Bhumij males and among females, WC, SBP, DBP, TG, LDL, and HDLc showed significant negative correlations.

Table 4.2: Intra-correlation among KAP scores

	Knowledge	*Attitude*	*Practice*	*KAP Total score*
Knowledge	1	0.661**	0.065	0.788**
Attitude		1	0.164**	0.806**
Practice			1	0.587
KAP Total score				1
Values in parentheses indicate significance level: **p< 0.01				

The correlations among the K, A, P, and Kap total scores are shown in Table 4.2. Knowledge was found to have a significant positive correlation with attitude (r =.661, p<0.01) and KAP total score (r =.788, p<0.01), while no association was observed with practice. Attitude was significantly positively correlated with practice (r =.164, p<0.01) and KAP total scores (r =.806, p<0.01), implying that an increase in good attitude led to good practice and increased KAP scores. Again, no association was observed between practice and total KAP score.

An ANOVA test was performed to check the difference in the mean of the CVD risk variables accordingly to different categories of KAP, such as poor, satisfactory, and good, among each participant group (Table 5). Among Bengali males, a non-significant difference in the mean of the risk variables was observed between poor and satisfactory KAP; however, among Bengali females, a significant difference was observed among all the variables except HDLc and FBG, implying that participants with satisfactory KAP had a lower mean value than those with poor KAP. A similar trend was observed among the Bhumij counterparts for WC, SBP, and DBP. The post-hoc results among males indicated that participants with good KAP had significantly lower mean BP than those with poor KAP. Interestingly, among female participants, significant mean differences were observed between poor vs satisfactory and good for WC, SBP, and DBP, and between poor vs satisfactory for TG. This indicates that as the KAP condition improves, the mean of the CVD risk variables will decrease significantly.

Table 6: Effect of KAP on combined CVD risk variables of the participants

Combined CVD risk Variables of	Wilks' λ	F Value	p Value	Partial η²
Bengali Male	0.971	0.384	0.941	0.029
Bengali Female	0.777	3.805	0.001	0.223
Bhumij Male	0.842	1.125	0.329	0.082
Bhumij Female	0.666	2.900	0.001	0.184

Multivariate analysis of CVD risk variables by KAP categories is shown in Table 6. It was confirmed that KAP plays a significant role in influencing the CVD risk variables. Interestingly, the effect among females was found to be significant compared to male participants. Among Bengali males, Wilks' $\lambda = 0.971$, F (9,115) = 0.384, $p > 0.05$, and $\eta^2 = 0.029$ indicated that KAP explained only 2.9 % (non-significant) of the variance for combined CVD risk. A similar trend was noticed among the Bhumij males with Wilks' $\lambda = 0.842$, F (18,226) = 1.125, $p > 0.05$ and $\eta^2 = 0.082$, indicating that it can only explain 8.2 % of the variance. Interestingly, among Bengali and Bhumij females, KAP is explained nearly 22.3 (Wilks' $\lambda = 0.777$, F (9,119) = 3.805, $p < 0.001$ and $\eta^2 = 0.223$) and 18.4 (Wilks' $\lambda = 0.666$, F (18,232) = 2.900, $p > 0.001$ and $\eta^2 = 0.184$) of the variance for the combined CVD risk variables out of the total variance in the model.

Discussion

This study aimed to explore the relationship between the total KAP score and CVD risk variables. It further explores how this "KAP" influences cardiovascular health, its relationship to cardiovascular health, and whether it has any actual impact on risk variables. Addressing the first objective, significant differences in attitude, practice, and total KAP scores were found, with significantly higher mean values among Bhumij participants. This shows ethnic differences in KAP and its scores.

Numerous studies have reported an association and differences in Knowledge, Attitude, and Practice (KAP) across different sexes. In 2016, Mirza et al. reported that men exhibited significantly higher knowledge and lower practice scores regarding cardiovascular disease (CVD) than their female counterparts. Consistent with these findings, our study indicated that males had demonstrated higher mean knowledge scores and lower mean practice scores than females. Their KAP scores revealed that 5.86%, 52.5%, and the remaining 41.9% fell into the high, moderate, and low/poor categories, respectively, which aligns with our findings, where 33.5%, 62.6%, and 4.4% exhibited poor, satisfactory, and good KAP, respectively.

Ibrahim et al. in 2016 found that attitude is significantly correlated with practice, but correlation was absent between knowledge and practice/attitude, whereas the present study found that attitude is correlated with both practice and knowledge. Conversely, Alhowaymel et al. (2023) reported a significant negative association between knowledge and practice scores, which is quite interesting and differs from the findings of other studies. In another context, poor knowledge and attitude can mediate the odds ratio of having CAD by 3.73 and 9.34 times (Zahid et al., 2016), which is corroborated by this study, that poor attitude and practice may escalate the mean of CVD risk variables or adversely affect cardiometabolic health. The same has been reported by Machaalani et al. (2022) among the Lebanese population, indicating a significant mean difference in the scores of knowledge (23.5 vs. 26.6), attitude (61.4 vs. 63.3), and practice (6.3 vs. 6.0) between the non-CVD and CVD groups.

In the present study, the association between CVD risk factors and total KAP scores indicated a negative relationship, except for HDLc, which indicates that poor KAP scores influence the mean values of the risk factors. A similar trend was reported by Amarasekara et al. (2016), where the body mass index (BMI) for low and good practice scores was 33 kg/m2 and 30 kg/m2, respectively. This is consistent with our ANOVA results. These changes were confirmed by post-hoc analysis. Our results support the findings of Toupchian et al. (2016), who reported that the mean risk variable, except HDLc, significantly decreased in the good-knowledge category compared to the poor-knowledge category.

In contrast, under the attitude condition, only TC, LDLc, and WC were significantly lower under a good attitude. KAP, as an endogenous component, and behaviour had a positive impact on CVD risk factors. The present study clearly demonstrates this relationship through a MANCOVA, showing that, among females, KAP accounts for approximately 20.3% of the changes in combined CVD risk variables, whereas male KAP explains no substantial variance in these variables.

Numerous studies have highlighted the gap between knowledge and practice regarding cardiometabolic health. Even Shammi et al. (2021) reported significant discrepancies between K (71.23), A (75.20), and P (51.56) scores. The present findings support the above results, due to a large discrepancy (50-60%) observed between the average scores for knowledge and practice among both sexes. Due to a lack of concern for cardiovascular health, a significant gap has emerged between attitude and practice, which is further inclined towards undesirable and undisciplined

behaviour. In this context, not only women but also men who stay within their local surroundings find it hard to go beyond their predefined areas and are consequently less exposed to educational opportunities, news, and awareness initiatives.

Strength

The present study examined the KAP of two ethnic groups cohabiting in the same environment, utilising identical amenities, and adhering to broadly similar lifestyle behaviours. Bengali participants, despite being more educated, exhibited poorer cardiometabolic health, as evidenced by their lower KAP mean score than their counterparts. Furthermore, our study elucidates the discrepancies between attitudes and practices. It assesses the impact of KAP on combined CVD risk variables using MANOVA.

Conclusions

Although this study focused on KAP, proper awareness plays a key role in society. Most participants were aware of CVD outcomes and lifestyle impacts, but factors impeding good health included lack of self-care, time limitations, and insufficient knowledge. To earn a living, they work diligently under any conditions, resulting in limited time for personal care and health negligence. When the KAP score is favourable, CVD risk variables remain normal; however, this changes when the KAP score becomes poorer. Favourable KAP leads to a healthy lifestyle, which reflects the health status. Although most participants engaged with smartphones, televisions, and radios, they did not show substantial interest in CVD awareness and underestimated their risk.

Therefore, management of CVD is crucial. The adage "prevention is better than cure" applies; therefore, before the disease becomes prevalent, it is necessary to eliminate the responsible factors. These diseases result from interconnected socio-physical and psychological factors. If preventive measures are taken, it is possible to control the disease; otherwise, it may take control of us. However, the final choice remains in our court.

Limitations

Despite addressing the gaps in previous research, this study had some constraints. Specific categorical data (detailed sociodemographic data) and comprehensive information on diet and physical activity are lacking. The sample size was not

sufficient; increasing the sample size to 800 (200 in each group) could have offered a different edge to the KAP. Financial constraints were felt during the sample selection and reaching for a few important variables.

Acknowledgements

Conflicts of interest

No conflicts of interest have been reported for this study.

Ethics Statements

Ethical clearance was obtained from the Institutional Ethical Committee of Sidho-Kanho-Birsha University, Purulia, with file no. Ref/IEC/465/01/C/a/22 dated 12.04.22. Written consent was obtained from each candidate before the study by translating the consent form into the local language, using a local field guide.

Author's Contributions

The study and schedule were designed by the MD. CSU and IB performed data collection and fieldwork. Furthermore, CSU performed the manuscript design, writing, and analysis, whereas MD checked and formatted the manuscript. All the authors approved the final version of the manuscript.

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Table 5: Mean comparison of the CVD risk variables between the categories of KAP (poor, satisfactory and good)

Participants	KAP categories	CVD risk variables with Mean and Sd							
		WC	SBP	DBP	TC	TG	LDLc	HDLc	FBG
Bengali Male	Poor (n=48)	78.43 (10.108)	129.54 (13.739)	80.15 (11.319)	141.0(32.405)	152.34(69.182)	82.89(26.578)	30.77(8.871)	107.04(16.437)
	Satisfactory (n=77)	76.78 (10.753)	130.22 (14.734)	80.48(11.179)	135.88(29.878)	140.69(60.596)	78.65(25.640)	30.64(8.018)	106.29(16.808)
F value		0.730	0.066	0.026	0.844	0.979	0.786	0.008	0.061
Bengali female	Poor (n=59)	80.38 (12.738)	129.63 (13.391)	82.61 (10.708)	142.95(28.353)	110.59 (43.195)	83.72 (30.458)	35.51 (8.131)	113.61 (45.484)
	Satisfactory (n=70)	73.29 (10.374)	121.59 (16.892)	76.53 (12.283)	123.78 (24.596)	79.18 (30.641)	71.32 (20.884)	36.16 (7.734)	106.50 (29.315)
F value		12.122***	8.378**	8.815**	16.910***	23.182***	7.454**	0.215	0.286
Bhumij Male	Poor (n=35)	75.53 (9.624)	134.89 (16.942)	83.66 (13.047)	134.90 (29.425)	113.74 (55.452)	69.14 (21.571)	41.46(11.549)	105.49 (25.308)
	Satisfactory (n=83)	75.68 (9.603)	128.49 (11.633)	79.47 (10.065)	135.46 (26.603)	106.81 (46.372)	73.80 (23.000)	41.15(10.439)	106.44 (16.367)
	Good (n=6)	77.22 (7.726)	119.33 (8.017)	71.50 (5.648)	126.01 (39.940)	101.86 (56.860)	78.98 (28.299)	37.33 (7.146)	111.00 (7.014)
F value		0.082	4.867**	3.889*	0.317	0.298	0.747	0.395	0.215
Post Hoc			Poor vs Good	Poor vs Good					
Bhumij Female	Poor (n=27)	78.88 (8.957)	137.63 (14.926)	87.78 (10.675)	152.17 (27.032)	93.61 (43.111)	90.96 (24.586)	41.70 (8.454)	107.52 (16.653)
	Satisfactory (n=84)	71.10 (9.142)	123.04 (15.133)	79.93 (10.313)	143.21 (27.904)	73.51 (35.395)	85.24 (26.149)	44.82 (8.920)	101.67 (18.383)
	Good (n=16)	70.85 (10.502)	118.44 (9.571)	73.44 (8.937)	146.53 (32.542)	81.59 (40.989)	81.81 (21.093)	45.13 (8.221)	99.63 (11.916)
F value		7.557***	12.508***	10.720***	1.033	2.935*	0.778	1.405	1.439
Post Hoc		Poor vs Satisfactory, Poor vs Good	Poor vs Satisfactory, Poor vs Good	Poor vs Satisfactory, Poor vs Good		Poor vs Satisfactory			

Values in parentheses indicate significance levels: **p< 0.01, ***p< 0.001