



Trends of Junk Food consumption among College going Adolescents based on Planned Behavior Theory, A cross-sectional survey.

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Abstract:

Introduction: Junk food consumption is new trend in Pakistan and everywhere junk food spots are opened which are easily accessible and affordable by teenagers. High consumption of junk food has developed its huge popularity which has low content of nutrients but it includes high content of sugar, fats, salts and food preservatives. Junk food consumption pattern in adolescents reported enormously in Pakistan.

Objective: To explore junk food consumption in college going adolescents based on theory of planned behaviour (TPB). Moreover, TPB is based on relationship among subjective norms, behavioural intention and perceived behavioural control.

Methodology: This cross-sectional study was conducted on 355 adolescents. Sample was selected based on probability sampling method, in which first sample was selected based on cluster sampling method and secondly, based on random sampling method. Using SPSS, outcomes were computed on data gathered, it includes percentages, frequencies, mean, standard deviation, Pearson correlation and multiple regression analysis between dependent and independent variables.

Results: showed that junk food consumption patterns among adolescents were average accounted for 50%. More than 80% of junk food was consumed when friends were around.

Conclusion: Using TPB, attitude toward health was main element. Hence, knowledge and awareness level were high among adolescents but perceived control behaviour was modified by their peers which let them consume high rate of junk food even knowing fact that junk food has an unhealthy effect on health status.

Keywords: Junk Food, Subjective Norms, Consumption, Adolescent, Behaviour, Life style

Introduction:

Junk food consumption is new trend in Pakistan and everywhere junk food spots are opened which are easily accessible and affordable by teenagers.¹ High consumption of junk food has developed its huge popularity which has low content of nutrients but it includes high content of sugar, fats, salts and food preservatives. In book of George Ritzer, "McDonaldization of society", overwhelming social process has explained which has shown social practices and ex-

plained homogeneity of eating habits of people at global level.²

Most of adolescents prefer junk food because of having nuclear families, working parents and food sales. It is also proclaimed that adolescent eating behaviours were based on knowledge, food preferences, beliefs, dieting, attitudes, macrosystem and environmental influences.³ Macrosystem factors including, social and cultural norms, food production, distribution system, local and federal policies, mass

media and advertisement play an important role in determination of food eating behaviours. Furthermore, environmental influences on adolescents eating habits and food choices which may include as peers, family, teachers, advertisement as well as easy access to food availability which might have direct association with theory of planned behaviour.⁴ In past two decades there has rapid increase in overweight prevalence among adolescents in Brazil which has increased by 4.2-4.3 %, in China from 6.4-7.7% and in USA it has increased to 15.4-25.6%.^{5,6} Although, there are lack of studies conducted in Pakistan which gives a picture of prevalence of junk food consumption among adolescents, but it is known fact that there is unexpected increase of obesity among adolescents of Pakistan.⁷

Theory planned behavior:

theory of planned behavior) is one of most useful theoretical model to guide junk food consumption among adolescents.⁸ In TPB, reciprocal determinism explains that human behaviour, including dietary behaviour which is result of personal factors and environmental factors and in end, it affects as constant reciprocal relationship. Family and friends have particular interests which are based on society, rituals and religious customs which effects choices of food.⁹ Cho has identified that, proximal norms from best friends were key influent on student binge drinking behavior comparing to their distal college norms.¹⁰ In relationship to eating, de la Haye in 2010 has explained, male was more likely to adapt behaviors from their friends as compared to females.^{11, 12} Also, eating behaviours from parents were key models for their children food preferences and future food choices,¹³ Currently, in Pakistan there is a largest cohort having 25 million people of age group 15 to 24 year. It can be hypothesized that nutritional status of adolescent in high income cohort is affected by change in their life style modification and diet intake which leads to obesity and overweight.¹⁴ research study has developed to identify how behavioral attitude, subjective norms and perceived control behavior effects adolescents junk food consumption. theoretical framework of TPB provides a detail insight to investigate personal and social pressure that may affect adolescents' choices to consume junk food.¹⁵

Objective:

To identify how behavioral attitude, subjective norms and perceived control behaviors effects adolescents junk food consumption. theoretical framework of TPB provides a detail insight to investigate personal and social pressure that may affect adolescents' choices to consume junk food.¹⁵

Methodology:

This descriptive cross-sectional study which was conducted

among college adolescents of Wah Cantt, district Rawalpindi. Sample size was calculated based on previous studies which showed that that junk food consumption among adolescent students is 36%.¹⁶ Considering confidence Interval as 95% and z value of 1.96, sample size was calculated by using WHO sample size calculator which gave total sample size of 355. Sampling was based on probability sampling method. Adolescent aged between 13-18 years present in the class room at the time of data collection were included after consent. Using cluster sampling technique, we choose 3 different colleges of Wah Cantt, and then from each college participants were selected using random sampling using list of students provided by administration of the colleges. Each participant was asked to fill the questionnaire with the help of teacher and researcher. Using SPSS 25.0. mean and standard deviation was calculated for quantitative variables. Frequency and percentages were calculated for qualitative variables. Pearson correlation was computed between all variables with its positive and negative relationship. Multiple regression was done to identify their significant association between dependent and independent variables. Significance p value of $p \leq 0.05$ and $P \leq 0.01$ will be considered as significant and highly significant (2-tailed test).

Results:

Junk Food consumption frequency:

Table 1 showed that, junk food consumption pattern with mean value of 2.18 showed that both male and female participants like to intake French fries at high frequency. Also, it was found that most of junk food was consumed when participants meet their friend with 3.32 value of mean and friends were only reason participants have consumed junk food with mean value of 2.20. Adolescents ate junk food as their snack with higher frequency of 81.7% comparing it as consuming junk food as main meal. Most preferable place for junk food consumption was commercial area among male and female participants with 54.9%.

Variables		Total n= 355	Sex of Participant		Mean± Standard Devia- tion	x ² or t
			Boys (n=178)	Girls (n=177)		
Consumption Frequency (per month)	Hamburger	44 (12.4) ¹⁾	21 (11.9) ¹⁾	23 (12.9) ¹⁾	2.18±0.68	59.869
	French Fries	215 (60.6)	105 (59.3)	110 (61.8)		
	Pizza	83 (23.4)	44 (24.9)	39 (21.9)		
	Doughnuts	13 (3.7)	7 (4.0)	6 (3.4)		
Occasions for junk food consumption	Parents were not home	33 (9.3)	16 (9.0)	17 (9.6)	3.32±1.425	43.922
	Special Days	81 (22.8)	41 (23.2)	40 (22.5)		
	Meeting Friends	97 (27.3)	55 (31.1)	42 (23.6)		
	When Hungry	49 (13.8)	24 (13.6)	25 (14.0)		
	Out of Habit	72 (20.3)	27 (15.3)	45 (25.3)		
	Others	23 (6.5)	14 (7.9)	9 (5.1)		
With whom you eat	Parents	88 (24.8)	42 (23.7)	46 (25.8)	2.20±0.94	43.863
	Friends	147 (41.4)	87 (49.2)	60 (33.7)		
	Siblings	78 (22.0)	23 (13.0)	55 (30.9)		
	Alone	42 (11.8)	25 (14.1)	17 (9.6)		
Eat junk food as	Main meal	65 (18.3)	35 (19.8)	30 (16.9)	1.81±0.38	88.391
	Snack	290 (81.7)	142 (80.2)	148 (83.1)		
Places	Near home	112 (31.5)	47 (26.6)	65 (36.5)	2.23±0.90	46.695
	Near college	48 (13.5)	15 (8.5)	33 (18.5)		
	Commercial area	195 (54.9)	115 (65.0)	80 (44.9)		

Table No 1: Junk food consumption frequency (1N (%) = Number (percentage))

Variables	Total n= 355	Sex of Participant		x ² or t
		Boys (n=178)	Girls (n=177)	
Affective Behaviour (ascent towards ____ a month)				
Zinger burger	1.63±0.48 ²⁾	1.66±0.47 ²⁾	1.60±0.49 ²⁾	63.595
French fries	1.20±0.40	1.20±0.40	1.20±0.40	56.125
Pizza	1.56±0.50	1.57±0.49	1.54±0.51	58.494
Fried chicken	1.41±0.49	1.35±0.48	1.47±0.50	54.015
Doughnuts	1.64±0.47	1.75±0.43	1.54±0.49	64.914
Total	7.44±2.34	5.87±2.27	7.35±2.39	297.143
Instrumental Behaviour (I believe that Junk food_____)				
I have knowledge of junk food	1.32±0.85	1.28±0.45	1.3708 1.11874	29.276
Intake is not healthy	1.26±0.90	1.23±0.42	1.3034 1.20643	26.407
Has all important nutrients	1.76±0.42	1.76±0.42	1.7584 .42924	77.623
Is good in taste	1.09±0.29	1.10±0.30	1.0955 .29474	69.168
Spots provide an attractive environment	1.18±0.38	1.16±0.37	1.19±0.39	57.557
Spots are hygienic and clean	1.74±0.43	1.70±0.45	1.78±0.41	74.751
Is clean and hygienic	1.80±0.39	1.76±0.42	1.84±0.36	85.852
Meal size is large enough to feel full	1.45±0.49	1.4±0.49	1.46±0.50	54.934
Has high content of salt	1.55±0.49	1.43±0.49	1.67±0.47	58.868
Has high content of fats	1.20±0.40	1.18±0.38	1.23±0.42	56.125
Eating will make be obese	1.29±0.45	1.29±0.45	1.28±0.45	53.452
Intake has many calories	1.34±0.48	1.30±0.48	1.39±0.48	51.977
Total	17.0±6.05	16.67±5.18	17.39±6.56	695.99

²⁾ Response categories which have (1 = agree, 2 = disagree).

²⁾ Mean ± Standard Deviation

Table No 2: Behavioural Intention of junk food consumption

Variables			Total n= 355	Sex of Participant		x ² or t
				Boys (n=178)	Girls (n=177)	
Injunctive Norm	Motivation to comply (Follow beliefs of)	Family	97 (27.3) ¹⁾	44 (24.9) ¹⁾	53 (29.8) ¹⁾	50.063
		Teacher	43 (12.1)	34 (19.2)	9 (5.1)	
		Friends	215 (60.6)	99 (55.9)	116 (65.2)	
	Normative belief (I think that ___ likes Junk food)	Family	52 (14.6)	32 (18.1)	20 (11.2)	69.948
		Teacher	14 (3.9)	13 (7.3)	1 (0.6)	
		Friends	289 (81.4)	132 (74.6)	157 (88.2)	
Descriptive Norms	Motivation to comply x Normative belief	Family	73 (20.6)	41 (23.2)	32 (18.0)	26.922
		Teacher	30 (8.5)	26 (14.7)	4 (2.2)	
		Friends	252 (71.0)	110 (62.1)	142 (79.8)	

Table No 3: Subjective Norms towards junk food consumption¹⁾N (%) = Number (percentage)

Variables	Total n= 355	Sex of Participant		x ² or t
		Boys (n=178)	Girls (n=177)	
I will still eat junk food if there will be fewer junk food stores	1.36±0.50 ²⁾	1.28±0.46 ²⁾	1.43±0.52 ²⁾	50.884
I believe that meeting friends other than junk food spots could be difficult	1.58±0.49	1.60±0.49	1.56±0.49	60.579
I would still consume junk food even I am on dieting.	1.48±0.50	1.58±0.49	1.38±0.48	55.889
I could consume junk food even if I must wait for a long time for its preparation	1.35±0.47	1.40±0.49	1.30±0.46	53.277
I could even eat junk food if there would be fewer advertisement of junk food on television or on social media	1.43±0.49	1.44±0.49	1.42±0.49	54.433
I could still eat junk food even if less sale promotions would be available	1.39±0.48	1.41±0.49	1.37±0.48	53.641
I believe that changing my junk food intake behaviours for health would be difficult	1.49±0.50	1.47±0.50	1.51±0.50	56.288
I believe that going to places other than junk food spots could be difficult for special occasions	1.56±0.49	1.48±0.50	1.65±0.47	59.459
I believe that altering my junk food eating behaviour would be difficult because I am consuming junk food from young age	1.58±0.49	1.61±0.48	1.55±0.49	60.412
I could still consume junk food even I will get nutritional education using multimedia rather than basic lecture or brochure	1.45±0.49	1.44±0.49	1.47±0.50	55.012
I could eat junk food even getting nutrition education	1.51±0.50	1.43±0.49	1.58±0.49	56.940
I could consume junk food even if I have learnt how to quickly prepared a simple meal	1.49±0.50	1.42±0.49	1.55±0.49	56.185
I could eat junk food even I get to know about nutritional education and its impact of on health	1.51±0.50	1.45±0.49	1.57±0.49	57.035
Total	19.23±6.45	19.07±6.41	19.39±6.42	730.03

Variables	Consumption Frequency	Behavioural Intension	Attitude	Subjective Norms	Perceived Control Behaviour
Consumption Frequency	1	.024	-.004	-.042	.044
Behavioural Intension	.024	1	.027	.062	.334 **
Attitude	-.004	.027	1	.097	.181 **
Subjective Norms	-.042	.062	.097	1	.086
Perceived Control Behaviour	.044	.334**	.181**	.086	1

Table No 4: Perceived control behaviour for junk food consumption

1) Response categories which have (1 = agree, 2 = disagree). 2) Mean \pm Standard Deviation

Table No 5: Correlation coefficients between variables.

Variables	β ²⁾	F ³⁾	R ² ⁵⁾	t ⁴⁾	Sig.
Dependent variable = Behavioural intention ⁶⁾					
Attitude	-.038	15.100	.114	-.735	.463 ¹⁾
Subjective Norms	.037			.731	.466 ¹⁾
Perceived Control Behaviour	.338			6.601	.000 ¹⁾
Dependent variable = Junk food consumption frequency ⁷⁾					
Perceived Control Behaviour	.028	.358	.002	.712	.477 ¹⁾
Behavioural Intention	.019			.193	.847 ¹⁾

¹⁾Correlation significant at ** $p=0.05$ level

Table No 6: Multiple Regressions on Consumption of Junk Food.

¹⁾ Correlation significant= 0.05 level (2-tailed).

²⁾ β = it is measure of predictor variable which showed influences criterion (dependent) variable/ standardized parameter estimate.

³⁾ F= it is ratio of mean regression sum of squares divided by mean error sum of squares.

⁴⁾ t= T-test

⁵⁾ R²= R-squared is a statistical measure of how close data were to fitted regression line

⁶⁾ Behavioural Intention in this model was intention to consumption of junk food per month, shown in table 3. Model df = 355

⁷⁾ Junk food consumption frequency per month, as shown in table 2. Model df = 355

Behavioural intention:

The behaviour intention of all participants based on affective behaviour and instrumental behaviour is shown in table 2. In term of affective behaviour, total mean and standard deviation calculated as 7.44 ± 2.34 which showed that most of participants were more inclined toward French fries and fried chicken. On other hand, instrumental behaviour value of mean and standard deviation has calculated as 17.0 ± 6.05 which predicted that, most of participants have sufficient knowledge that junk food has harmful effects on body but still prefer to consume it because of its taste.

Subjective Norm:

Subjective norms were based on injunctive and descriptive norms. In term of injunctive norms, motivation to comply and normative belief were based on beliefs of friends having 60.6% and linking of junk food consumption with friends were 81.4%. On other hand, in term of descriptive norm participants only belief and follow their friend's choices which has highest percentage of 71% (Table 3)

Perceived Control Behaviour:

The average total means and standard deviation for perceived control behaviour has calculated as 19.23 ± 6.45 which showed that, most of participants apart of knowing all hazardous facts of junk food consumption they were more likely to consume junk food even less stores available, less advertisement, less promotion available and even they get education of junk food adverse effects. But still if they can easily control this addiction. (Table 4)

Table 5 showed that, variables of theory of planned behaviour has shown significant positive correlation with attitude and behaviour intention of participants with $P \leq 0.05$. Multiple regression analysis showed that, perceived control behaviour of junk food consumption was highly correlated with behavioural intention with $R^2 = 0.114$ and significantly associated with $P = 0.00$ (Table 6)

Discussion:

Theory planned behaviour is well-known adaptive model which has identified attitude, subjective norms and perceived control behaviours that has eventually described their choice toward behaviour. Firstly, behavioural attitude was calculated which further included two components; affective behaviour and instrumental behaviour. In affective behaviour, all participants were more inclined toward french fries and fried chicken. Instrumental behaviour explained that, most of participants >80% were familiar with junk food, as it was known to them that junk food was not good for their health, it was delicious, environments were attractive, junk food was large enough to feel full, there was excess amount of salt and fat in junk food and junk food can made them fat. overall explanations have given a clear background of participants knowledge level and it is

found that they have good knowledge and awareness level regarding junk food. Studies conducted by Jeong and Kim¹⁷ has evaluated out that among male and female adolescents consume junk food as main meal.

Secondly, in subjective norms injunctive norms explained that, among most of participants followed their friend's beliefs. In case of normative beliefs, among participants believed that their friends would like their junk food consumption and among female participants believed that their friends would like their junk food consumption. Moreover, descriptive norms calculated that among male and female participants more than 70% believed that friends and family liked their junk food consumption. Other studies have found that, adolescents have consumed junk food with their friends especially when there were any celebrations. consumption was not merely common everyday but occasionally consumption rate is very high.¹⁸⁻²¹

In perceived control behaviour, it has been calculated that, both male and female participants, about >50% agreed that they will still eat junk food if there will be fewer junk food stores, believed that meeting friends other than junk food spots could be difficult, agreed they would still consume junk food even on dieting. But 38.4% agreed that they thought changing their junk food consumption behaviour could be difficult because they have eaten them from very young ages. outcome has concluded that, even knowing bad outcome of health status by consumption of junk food they would still consume junk food because of its taste and their friend's choice. Yoon And Wi studies¹⁹ that clean and hygienic environments were important choices made by them.

Conclusion:

outcome has explained that, there was high association between perceived control behaviour with behavioural intention and junk food consumption. There is a positive statistically significant association between behavioural intention with attitude, subjective norms and perceived control behaviour. There is a positive statistically significant relationship between junk food consumption frequency with behavioural intention and perceived control behaviour. There was some limitation found that study design is cross-sectional which has limited nature. There should be prospective study design which can estimate results without intervention and after interventions. In Wah Cantt socioeconomic status of participants was low due to which similar behaviour has been observed. Thus, on large scale study should be conducted which includes multiple strata of socioeconomic status that would develop detailed insight in term of outcomes. It has recommended that; amplification of obesogenic advertisement should be banned on television and social media so that less adolescents can be exposed to junk food related items. Carbonated drinks

and junk food selling should be banned in school and colleges so that intake level of junk food can be minimize. Nutrition based educational and awareness programmes should be made and seminars should be organized in educational institutions. Alternatives for junk food should be introduced and that should be well advertised. Government should work along with schools at all district level, make policies and plans which should be implemented for broad spectrum beneficial outcomes.

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