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Assessment of Health Perception of School Going Girls in West Bengal, India

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Authors' contributions

This work was carried out in collaboration among all authors. Author RD has collected the data for study, performed the statistical analysis and wrote the protocol. Author AC has wrote the first draft of the manuscript and has re write the paper. Author SKA has managed the analyses of the study, designed the overall research and has managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

The present study assessed perception, practices and impact, resultant to a process of seamless exposure to cognitive, affectional and actionable pursuits to health, nutrition and hygiene related stimuli,. The study was conducted in Barrackpore-II block of North 24 Parganas district in West Bengal, India. One hundred and ninety four (194) School going teenage girls aged between 10-19 years were randomly selected for the study. The study reveals that the health perception of an individual depends on the education, mother's education, family income and diet of that concerned person.

Keywords: Education; health perception; income; diet.

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1. INTRODUCTION

Health, hygiene and nutrition are orchestrated to each other just like a symphony of a music. Any discrepancy or dissonance may lead to chaotic conditions in the process of achieving the objective of health and nutrition. It is of paramount importance that the health education in our country should take care of these three aspects together and isochronously as well. The other aspects of health care or management involve an essential concept of sink-source interdependence. Only managing sink, i.e., hospitals or health care centers cannot solve the health problem, rather it entails and intricate the process, unless it takes care of the sources. If air pollution keeps on rising in an unabated manner by superseding the safe limit, e.g., carbon dioxide (CO_2) or Sulphur di oxide etc., the child health will keep on deteriorating like anything. Only putting up a patient suffering from Asthma in hospital cannot solve the problem, unless Sulphur level from the ambience is reduced substantively. Chetna Maliye and Garg [1]) reviewed that India consists of the largest adolescent population in the world. Many serious diseases in adulthood had their roots in adolescent. The main health issues encountered by the adolescents include mental health problems, infectious diseases, injuries and malnutrition. To attain overall adolescent health, there is the need to follow up a multidimensional approach covering all the adolescent health problems with special observation on mental health, behavioral change and communication towards healthy lifestyle and positive social environment to achieve better lifestyle. Lassi et al. [2] suggested that iron alone, IFA, Zinc and multiple micronutrient supplementation in adolescents can significantly improve serum haemoglobin concentration. The study also emphasized the importance of adolescent nutrition interventions. It is imperative that countries design nutritional interventions, particularly for adolescents. Kankana De, [3] performed a community based cross-sectional study of 386 adolescent girls of rural area of Paschim Medinipur. The result of the study revealed that 42.9 per cent of the respondents had mild under-nutrition, 1.8 per cent had severe under-nutrition while 64.2 per cent adolescent girl belong the normal range. Mesias et al. [4] studied that most children and adolescents worldwide fail to achieve the recommended calcium intake. The normal changes associated with the pubertal period promote greater mineral utilization which is required to be satisfied with sufficient calcium consumption. Diet, therefore, must contribute nutrients in sufficient quality and quantity to allow maximum bone mass development. Consequently, adolescents should definitely be educated and encouraged to consume adjusted and balance the diet that, together with healthy lifestyle, facilitate optimal calcium utilization. Banerjee *et al*, [5], conducted a cross-sectional study for over 527 school going adolescent girls aged between 10-18 years. Age specific nutritional assessment showed different grades of malnutrition among the respondents. Gomez's classification indicated about 60-70 per cent respondent were either moderate or mild mal-nutrition during their growth period.

2. RESEARCH METHODOLOGY

The study was conducted in Barrackpore-II block of North 24 Parganas district in West Bengal, India. 194 School going teenage girls aged between 10-19 years were randomly selected for the study. The results were derived from the statistical analysis like coefficient of correlation, step down regression and path analysis.

2.1 Objectives

(a) To delineate the general status of health, nutrition and hygiene status of school going teenage girls living in the study area.
(b) To identify and customize the perception, practices and impact of health, hygiene and nutritional practice followed by the target respondent, i.e., school going teenage girls as consequent variables 'Y'.
(c) To select and customize a set of socio-personal-economic and ecological variables to be the independent variables and exogenous variable influencing the consequent variable in the given social ecology of study areas.
(d) To estimate the level, intensity and direction of interaction amongst and between the dependent-Vs.-independent or exogenous and consequent variable both qualitatively and quantitatively.
(e) The analytical and heuristic outcome each expected to generate a micro level policy which would have implication for making strategic interventional management for the unique area of perception, practice and impact.

3. RESULTS AND DISCUSSION

Table 1 presents the co-effiecient of corelation between health perception (Y_1) and 28 independent variables (X_1 - X_{28}).

The following variables, viz., age (X_1), education (X_2), father's education (X_3), mother's education (X_4), total monthly family income (X_6), per capita income (X_7), distance from home to school (X_8), body weight (X_{10}), height (X_{11}), BMI (X_{12}), waist circumference (X_{13}), hip circumference (X_{14}), serum albumin (X_{21}), serum globulin (X_{22}), albulin/globulin (X_{23}), serum calcium (X_{24}), calorie in diet (X_{25}), carbohydrate present in diet (X_{26}), protein present in diet (X_{27}) and fat present in diet (X_{28}) are found to have positive and significant corelation with dependent variable health perception (Y_1).

So, these variables have got significant correlation with health perception for these selected respondents.

3.1 Regression Analysis

Table 2 presents the multiple regression analysis to estimate the functional effect of 28 causal variables on the consequent variable, Health Perception (Y_1). Based on β x R Values, it has been found that the three variables, viz., education (X_2), total monthly family income (X_6) and mother education (X_4) have recorded substantive contribution to health perception.

3.2 Stepwise Regression Analysis

Table 3 depicted that the most significant variables retained at the last step are Education (X_2), Mother's education (X_4), Total monthly family income (X_6), Distance from home to school (X_8), Height (X_{11}) and Carbohydrate present in diet (X_{26}) and they have contributed 54.71 per cent of total variance in health perception (Y_1).

Health perception has been immensely contributed by education, income and carbohydrate present.

3.3 Important Revelation

Better health perception has been built up by the mother's education. Income has also been a good indicator for health perception. Carbohydrate level has also been reflected in better health perception.

Education creates better perception on health. Mother's education has got substantive impact on daughter's health status and perception. Total monthly income helps assessing adequate food and nutritional supplements. Distance from home to school had got strategic and functional impact on the creation of health perception. Height can be estimated through health perception as the relation suggests. Carbohydrate in diet contributes proper construct and function of body and mind, subsequently reflected in health perception.

Model 2 presents the critical variables retained at the last step. It is observed that the six variables retained have contributed 54.71 per cent of variance in health perception (Y_1) and this is 54.71/57.39 per cent, i.e., 95.3 per cent of total R^2 value contributed by all this twenty eight causal variables together. So, these six variables have predominant effect on health perception (Y_1).

3.4 PATH ANALYSIS

Table 4 above presents the path analysis by decomposing the total effect (r) into direct, indirect and residual effect.

It is interesting to note that education has exercised the highest direct effect on health perception (Y_1), good enough to infer that education, in its present or a renewal status, has got the most important contribution to generate proper perception on health. So, proper education on health, nutrition and hygiene has got a conjunctive effect on creation of proper perception in regard to the aspects already mentioned. Albumin globulin ratio (X_{23}) has exerted the highest indirect effect to imply that physiological status of health has been indirectly responsible for better health perception.

Table 1. Coefficient of Correlation (r): Health Perception (Y_1) vs. 28 Independent Variables (X_1, X_{28})

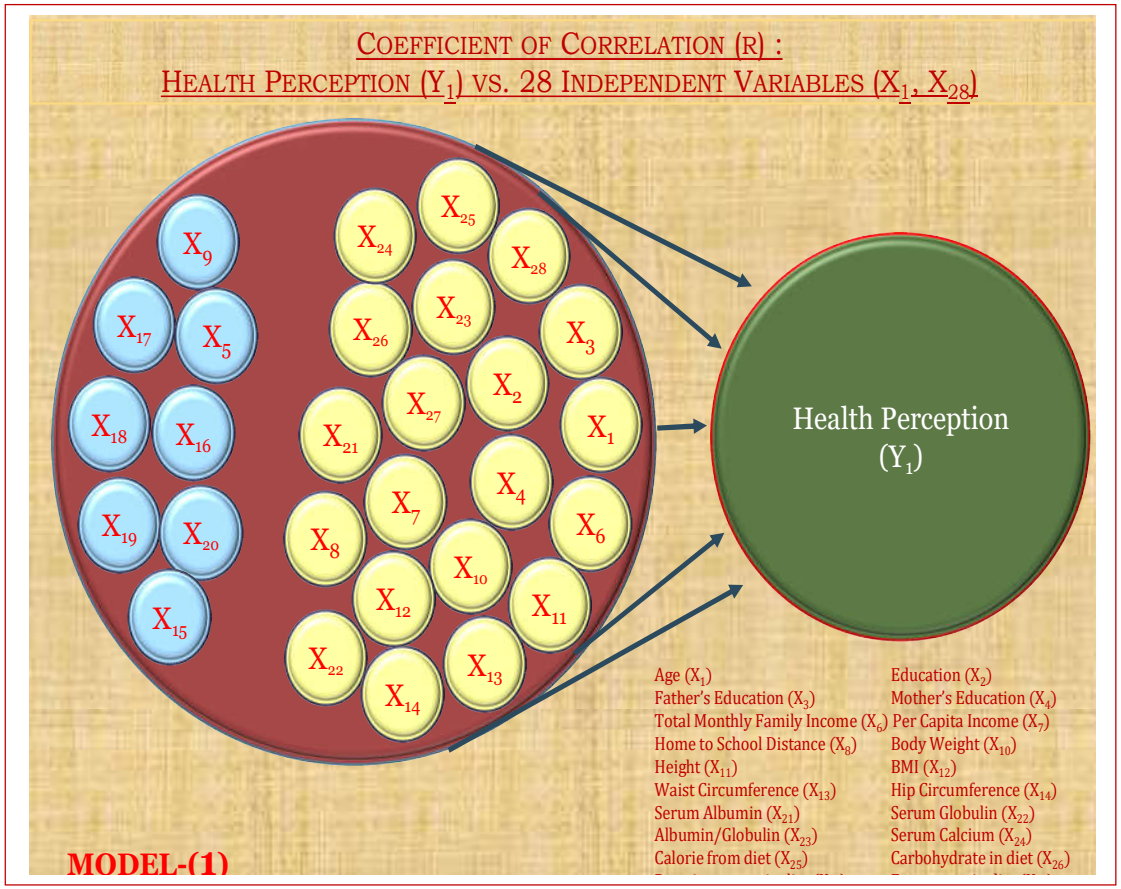
SL. NO.	Variables	'r' Value	Remarks ** significant at the 0.01 level * significant at the 0.05 level
1	Age (X_1)	0.64	**
2	Education (X_2)	0.624	**
3	Father's Education (X_3)	0.50	**
4	Mother Education (X_4)	0.51	**
5	Family Members (X_5)	-0.11	
6	Total Monthly Family Income (X_6)	0.54	**
7	Per Capita per month Income (X_7)	0.55	**
8	Distance from Home to School (X_8)	0.45	**
9	Watching TV (X_9)	-0.11	
10	Body Weight (X_{10})	0.51	**
11	Height (X_{11})	0.37	**
12	BMI (X_{12})	0.29	**
13	Waist Circumference (X_{13})	0.35	**
14	Hip Circumference (X_{14})	0.40	**
15	Waist to Hip Ratio (X_{15})	0.05	
16	Systolic Blood Pressure (X_{16})	.019	
17	Diastolic Blood Pressure (X_{17})	0.11	
18	Pulse Rate (X_{18})	-0.07	
19	Haemoglobin level (X_{19})	0.07	
20	Serum Total Protein (X_{20})	-0.03	
21	Serum Albumin (X_{21})	0.21	**
22	Serum Globulin (X_{22})	0.15	*
23	Serum Albumin-Globulin ratio (X_{23})	1.00	**
24	Serum Calcium (X_{24})	0.63	**
25	Calorie in diet (X_{25})	0.54	**
26	Carbohydrate in diet (X_{26})	0.23	**
27	Total Protein in diet (X_{27})	0.31	**
28	Fat in diet (X_{28})	0.56	**

Table 2. Regression analysis: Health perception (Y_1)-vs.-28 independent variables (X_1-X_{28})

SL. NO.	Variables	Beta	Beta x R (%)	REG. COFF.B	S.E. OF B	T Value E
1	Age (X_1)	0.083	9.298	0.062	0.089	0.697
2	Education (X_2)	0.233	25.405	0.239	0.120	1.983
3	Father's Education (X_3)	0.021	1.824	0.007	0.038	0.199
4	Mother's Education (X_4)	0.130	11.580	0.048	0.039	1.234
5	Family Members (X_5)	-0.063	1.177	-0.101	0.133	0.762
6	Total Monthly Family Income (X_6)	0.205	19.235	0.000	0.000	0.936
7	Per Capita per month Income (X_7)	-0.070	-6.656	0.000	0.000	0.310
8	Distance from Home to School (X_8)	0.212	18.026	0.000	0.000	3.191
9	Watching TV (X_9)	-0.009	0.166	0.000	0.001	0.150
10	Body Weight (X_{10})	0.080	7.123	0.013	0.025	0.522
11	Height (X_{11})	0.089	5.574	0.024	0.019	1.228
12	BMI (X_{12})	0.009	0.484	0.001	0.007	0.160
13	Waist Circumference (X_{13})	-0.167	-10.128	0.034	0.042	0.818
14	Hip Circumference (X_{14})	0.100	7.062	0.019	0.043	0.433
15	Waist to Hip Ratio (X_{15})	0.138	1.107	2.608	2.980	0.875
16	Systolic Blood Pressure (X_{16})	-0.033	-1.097	-0.003	0.006	0.535
17	Diastolic Blood Pressure (X_{17})	0.010	0.179	0.001	0.008	0.167
18	Pulse Rate (X_{18})	0.000	-0.006	0.000	0.008	0.009
19	Haemoglobin level (X_{19})	-0.003	0.007	-0.004	0.072	0.051
20	Serum Total Protein (X_{20})	-0.025	-0.442	-0.033	0.096	0.343
21	Serum Albumin (X_{21})	0.009	0.094	0.052	0.368	0.140
22	Serum Globulin (X_{22})	-0.025	-0.544	-0.052	0.258	0.203
23	Serum Albumin-Globulin ratio (X_{23})	-0.093	3.056	-0.375	0.473	0.793
24	Serum Calcium (X_{24})	-0.060	2.948	-0.061	0.059	1.044
25	Calorie in diet (X_{25})	0.061	0.712	0.000	0.004	0.107
26	Carbohydrate in diet (X_{26})	-0.205	0.979	-0.000	0.015	0.471
27	Total Protein in diet (X_{27})	0.079	2.896	0.010	0.016	0.624
28	Fat in diet (X_{28})	-0.002	-0.060	-0.001	0.039	0.015

Multiple R^2 = 57.39 per cent; SE = 4.90

Model. 1


COEFFICIENT OF CORRELATION (R) :
HEALTH PERCEPTION (Y_1) VS. 28 INDEPENDENT VARIABLES (X_1, X_{28})
X_9
X_{17}
X_5
X_{18}
X_{16}
X_{19}
X_{20}
X_{15}
X_{24}
X_{25}
X_{28}
X_{26}
X_{23}
X_3
X_{27}
X_2
X_{21}
X_1
X_7
X_4
X_8
X_6
X_{10}
X_{12}
X_{11}
X_{22}
X_{13}
X_{14}
Health Perception (Y_1)
Age (X_1)
Education (X_2)
Father's Education (X_3)
Mother's Education (X_4)
Total Monthly Family Income (X_6)
Per Capita Income (X_7)
Home to School Distance (X_8)
Body Weight (X_{10})
Height (X_{11})
BMI (X_{12})
Waist Circumference (X_{13})
Hip Circumference (X_{14})
Serum Albumin (X_{21})
Serum Globulin (X_{22})
Albumin/Globulin (X_{23})
Serum Calcium (X_{24})
Calorie from diet (X_{25})
Carbohydrate in diet (X_{26})
MODEL-(1)

Model. 2

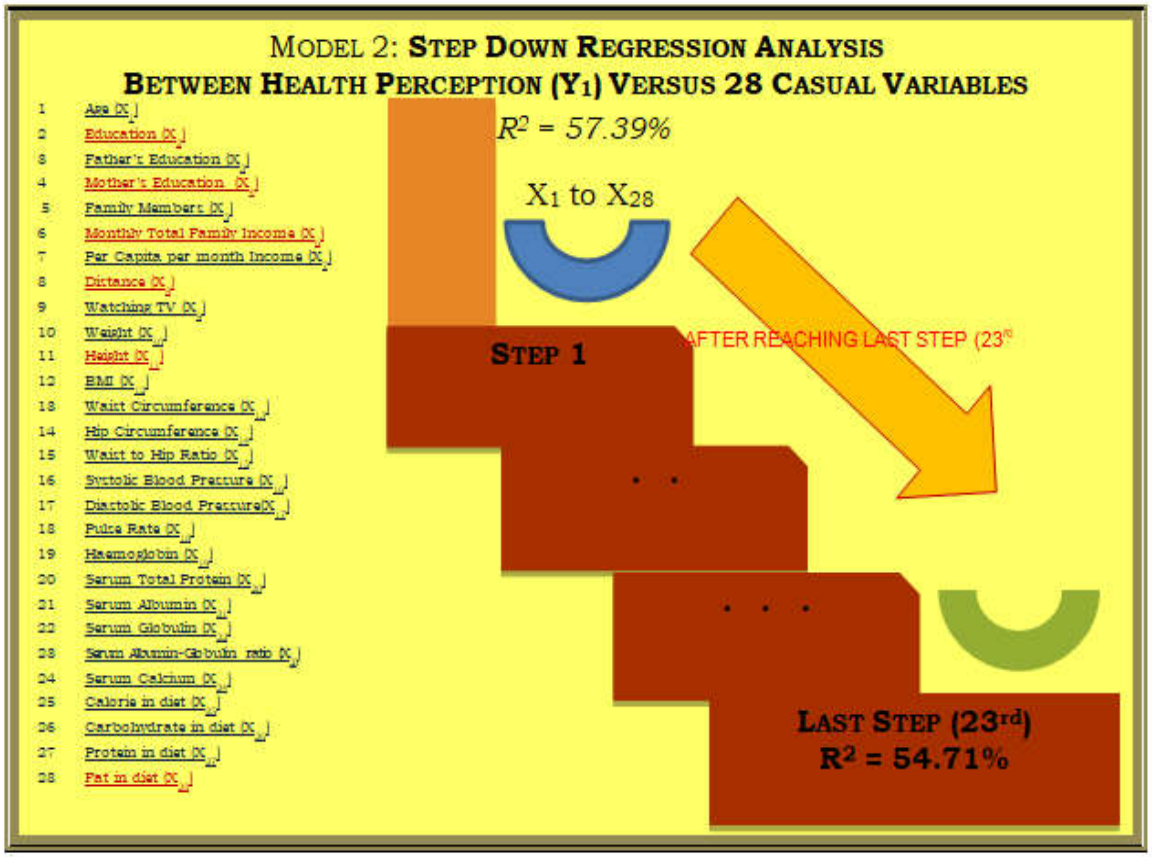

MODEL 2: STEP DOWN REGRESSION ANALYSIS
BETWEEN HEALTH PERCEPTION (Y_1) VERSUS 28 CASUAL VARIABLES
1 Age (X_1)
2 Education (X_2)
3 Father's Education (X_3)
4 Mother's Education (X_4)
5 Family Members (X_5)
6 Monthly Total Family Income (X_6)
7 Per Capita per month Income (X_7)
8 Distance (X_8)
9 Watching TV (X_9)
10 Weight (X_{10})
11 Height (X_{11})
12 BMI (X_{12})
13 Waist Circumference (X_{13})
14 Hip Circumference (X_{14})
15 Waist to Hip Ratio (X_{15})
16 Systolic Blood Pressure (X_{16})
17 Diastolic Blood Pressure(X_{17})
18 Pulse Rate (X_{18})
19 Haemoglobin (X_{19})
20 Serum Total Protein (X_{20})
21 Serum Albumin (X_{21})
22 Serum Globulin (X_{22})
23 Serum Albumin-Globulin ratio (X_{23})
24 Serum Calcium (X_{24})
25 Calorie in diet (X_{25})
26 Carbohydrate in diet (X_{26})
27 Protein in diet (X_{27})
28 Fat in diet (X_{28})
R^2 = 57.39%
X_1 to X_{28}
STEP 1
AFTER REACHING LAST STEP (23rd)
LAST STEP (23rd)
R^2 = 54.71%

Table 3. Health perception (Y_1)-vs.-28 causal variables (X_1.X_{28}): Six predominant variables retained at last step

Sl. No.	Variable	Beta	Beta x R (%)	Reg. Coff.B	S.E. OF B	T Value E
1	Education (X_2)	0.340	38.805	0.348	0.065	5.338
2	Mother Education (X_4)	0.173	16.119	0.064	0.023	2.783
3	Total monthly family income (X_6)	0.171	16.979	0.000	0.000	2.769
4	Distance from home to school (X_8)	0.226	20.167	0.000	0.000	4.014
5	Height (X_{11})	0.116	7.611	0.031	0.014	2.161
6	Carbohydrate in diet (X_{26})	-0.100	0.501	-0.003	0.002	1.961

R^2 = 54.71 per cent, SE = 2.05

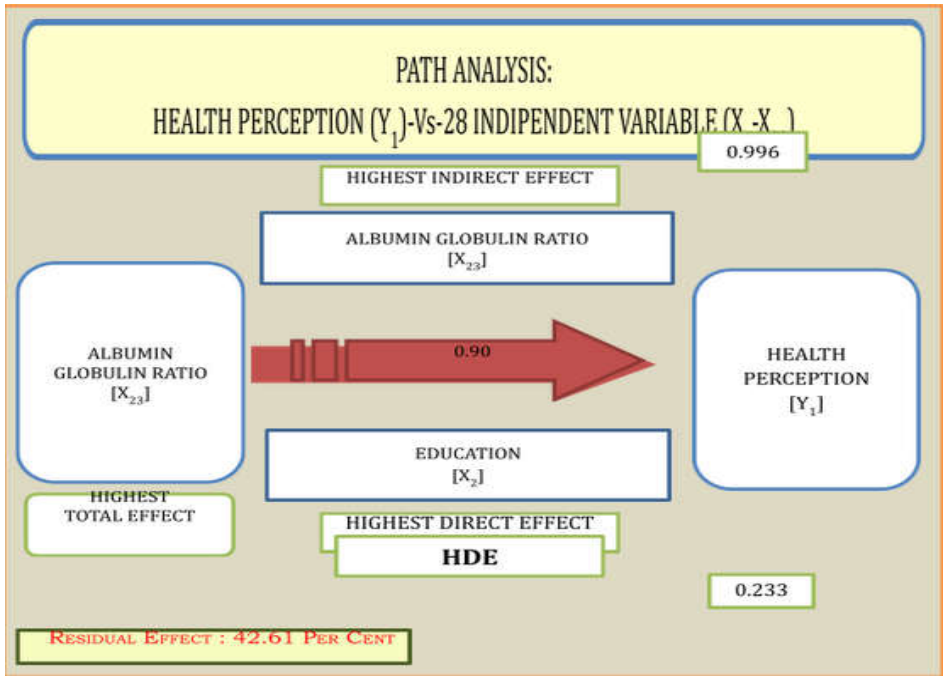
Table 4. Path analysis: Decomposition of total effect (r) into direct, indirect and residual effect: Health perception (Y_1)-vs-28 independent variable

Sl. No.	Variables	Total effect (r)	Total direct effect	Total indirect effect	Highest indirect Effect
1	Age (X_1)	0.64	0.0833	0.5567	X_2 (0.2031)
2	Education (X_2)	0.624	**0.2334**	0.3906	X_6 (0.102)
3	Father's Education (X_3)	0.50	0.0208	0.4792	X_2 (0.1234)
4	Mother's Education (X_4)	0.51	0.1304	0.3796	X_4 (0.1304)
5	Family Members (X_5)	-0.11	-0.0634	-0.1734	X_{26} (0.0203)
6	Total Monthly Family Income (X_6)	0.54	0.2053	0.3347	X_2 (0.1163)
7	Per Capita per month Income (X_7)	0.55	0.0697	0.4803	X_6 (0.1900)
8	Distance from Home to School (X_8)	0.45	0.2122	0.2378	X_6 (0.0906)
9	Watching TV (X_9)	-0.11	-0.0087	-0.1187	X_2 (-0.0515)
10	Body Weight (X_{10})	0.51	0.0803	0.4297	X_2 (0.1232)
11	Height (X_{11})	0.37	0.0893	0.2802	X_2 (0.0922)
12	BMI (X_{12})	0.29	0.0093	0.2807	X_2 (0.0726)
13	Waist Circumference (X_{13})	0.35	-0.0671	0.4171	X_6 (0.0750)
14	Hip Circumference (X_{14})	0.40	0.1003	0.2997	X_2 (0.1101)
15	Waist to Hip Ratio (X_{15})	0.05	0.1387	-0.0887	X_6 (0.0245)
16	Systolic Blood Pressure (X_{16})	.019	-0.0330	0.0520	X_8 (0.0586)
17	Diastolic Blood Pressure (X_{17})	0.11	0.0098	0.1002	X_6 (0.0520)
18	Pulse Rate (X_{18})	-0.07	0.0005	0.0705	X_2 (0.0520)
19	Haemoglobin level (X_{19})	0.07	-0.0028	.07280	X_4 (0.0168)
20	Serum Total Protein (X_{20})	-0.03	-0.0252	0.0552	X_{23} (0.0458)

Sl. No.	Variables	Total effect (r)	Total direct effect	Total indirect effect	Highest indirect Effect
21	Serum Albumin (X_{21})	0.21	0.008	0.2020	X_6 (0.0485)
22	Serum Globulin (X_{22})	0.15	-0.0253	0.1753	X_{23} (0.0813)
23	Serum Albumin-Globulin ratio (X_{23})	**0.90**	-0.095	**0.996**	X_2 (-0.0565)
24	Serum Calcium (X_{24})	0.63	-0.0596	0.6896	X_2 (-0.0682)
25	Calorie in diet (X_{25})	0.54	0.0611	0.4789	X_{26} (0.1919)
26	Carbohydrate in diet (X_{26})	0.23	-0.2050	0.4350	X_{25} (0.0572)
27	Total Protein in diet (X_{27})	0.31	0.0791	0.2309	X_{26} (-0.0865)
28	Fat in diet (X_{28})	0.56	-0.0023	0.5623	X_{26} (-0.0822)

Residual effect = 42.61%

Model . 3



The residual effect being 42.61 per cent, it is to infer that even with the constellation 28 variables, 42. 61 per cent of variance embedded with the consequent variable could not be explained.

Model M-5.3 presents the path analysis by decomposing the total effect (r = 0.90) into direct, indirect and residual effect. It is observed that the variable education (X_2) has exerted the highest direct effect (0.233) while variable albumin globulin ratio (X_{23}) has exerted the highest indirect effect (0.996).

4. CONCLUSION

The paper will provide tremendous micro sociological policy implications. This study is relevant especially in this pandemic situation. Never ever in the history of human civilization it has been found that a hand wash or face covering is having so much importance. In this pandemic situation the health perception is so important because we have to build up immunity in our metabolism, so that we can fight against COVID 9 and other viral attacks. For this purpose we have to be health conscious and we need to take more and more nutritious foods. This study revealed that education, mother's education, family income and diet of that concerned person is directly related to the health perception of the person. So, from the overall study we can conclude that education, income and diet are the most important things to make a person health conscious and woke.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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