University Students' Distribution According to Their Stages of Change to Adopt Healthy Diet

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ABSTRACT

Background: The nutrients that are swallowed and absorbed are crucial for the growth, upkeep, replacement, and repair of the trillions of cells that make up the organs and tissues that carry out the body's functions in the intricate

Study Objectives: This study aims to develop and test the psychometric properties of the Trans theoretical Model of Change Scales to Adopt Healthy Diet.

Design: A methodological design was used to guide this study.

Setting: This study was carried out in Al-Muthanna University.

Sample and Sampling: The study included a simple random sample of 560 undergraduate students who were recruited from six colleges in Al-Muthanna University.

Key words: Healthy diet, Human body, Economics

INTRODUCTION

The nutrients that are swallowed and absorbed are crucial for the growth, upkeep, replacement, and repair of the trillions of cells that make up the organs and tissues that carry out the body's functions in the intricate, beautiful system known as the human body. These nutrients can be found in the meals and drinks we consume. The relationship between the foods we consume—our diets—and the methods by which our bodies utilize, digest, and get nourishment from the nutrients in those meals is nutrition. Even though human bodies are remarkably adaptive and can survive for a long time on inadequate or inappropriate food, optimal health depends on optimum nutrition. When nutrients aren't present in sufficient amounts, aren't balanced, or otherwise [1].

As Juengst, et al. [2] warns us, Eating is a ritual that gives comfort, contentment, enjoyment, creativity, sustenance, nurture, appreciation, and healing. It is a communal activity that includes sharing, celebration, learning from one another, and helping the weak. It fulfills a variety of human needs.

While the necessity for food to support life and strengthen social ties has existed since the dawn of civilization, the two separate but concurrent institutions serving older Americans have quite different perspectives on food and nutrition. Food is often viewed as nurturing in the social service system, which includes the aging network, emphasizing the emotional, social, and quality-of-life components of eating. Historically, the healthcare system has prioritized nutrition and diet as a therapeutic therapy for chronic diseases, and more recently, it has begun to emphasize [3].

METHODOLOGY

Study design

This study's methodology was guided by a methodological design. The Transtheoretical Model of Change Scales to Adopt Healthy Diet were developed by the student researcher (SR) in accordance with DeVillis' (2016) criteria.

The setting of the study

The study was carried out at Al-Muthanna University. The study participants were recruited from six colleges in this university which are the College of Arts, College of Law, College of Education, College of Basic Education,

College of Administration and Economics, and College of Science (Chemistry and Mathematics).

Sample and sampling

(Five hundred and sixty) students enrolled in the aforementioned colleges were selected as a probability simple random sample. The most fundamental technique for probability sampling is simple random sampling. Elements are randomly chosen from the sampling frame to create basic random sampling [4].

The study instrument

The study tool is made up of the socio-demographic information of the students, including their age, gender, college, grade, living situation, marital status, place of residence, level of education, and household socioeconomic status, as determined by the Family's Socioeconomic Status Scale, which was adapted from previous studies. The overall score so goes from 4 to 40. The resulted score of 34-40 is categorized as upper class, the result of 21-33 as upper middle class, the result of 15-20 as lower middle class, and the result of 6-14 as lower class [5,6].

Statistical analyses

The data were analyzed using the statistical package for social sciences (SPSS) for Windows, version 26, Chicago, IL, and AMOS. The sociodemographic characteristics of the individuals were expressed using the descriptive statistical measures of frequency, percent, mean, and standard deviation. The exploratory factor analysis and principal component analysis were employed as part of the factor analysis measurement. Additionally, confirmatory factor analysis was applied.

Ethical considerations

The student researcher spoke with administrators at the University of Al-Muthanna about the study's specifics after gaining approval from the College of Nursing, University of Baghdad. Before the research data was gathered, 60 students who satisfied the inclusion criteria were asked to complete a pilot survey. This pilot study was carried out to look into survey readability and calculate the survey completion time. Before the data collection started, the instrument and procedure needed to be changed based on feedback. To ensure that they understand that participation is optional and that they can withdraw at any moment, the overall goal of the study and how to complete the questionnaire were communicated to the participants. The researcher gave participants assurances.

RESULTS

The study results reveal that the mean age is 21.39 ± 2.19; more than a half age 18-21-years (n=323; 57.7%), followed by those who age 22-25-years (n=170; 30.4%), and those who age 26-28-years (n=67; 11.9%). concerning the participants' gender, most are females (n=357; 63.7%) compared to males (n=203; 36.3%).

Regarding the marital status, most are not married (n=426; 76.1%), followed by those who are married (n=119; 21.2%), those who are divorced (n=7; 1.3%), those who are separated (n=5; 0.9%), and those who are widow/widowers (n=3; 0.5%). With respect to the grade, around two-fifth are second graders (n=223; 39.8%), followed by those who are first graders (n=182; 32.5%), those who are fourth graders (n=85; 15.2%), those who are third graders (n=67; 12.0%), and those who are fifth graders (n=3; 0.5%).

As per the living arrangements, the majority reported that they have been living with parents (n=452; 80.7%), followed by those who have been living with their mother (n=49; 8.8%), those who have been living with their relatives (n=41; 7.3%), those who have been living with their father (n=12; 2.1%), and those who have been living with their friends (n=6; 1.1%). Concerning the residency, a half reported that they have been living in urban areas (n=280; 50.0%), followed by those who have been living in suburban areas (n=143; 25.5%), and those who have been living in rural areas (n=137; 24.5%).

Extraction Method: Principal component analysis.

When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

The study results demonstrate that seven factors accounted for 56.592% variance within the construct is by Stages of Change (Continuous measure) factor. All items meet the threshold at which factor loadings (pattern coefficients for oblique rotations) are considered meaningful.

The study results exhibit that all items of the Stages of Change Scale (continuous measure) to adopt healthy diet displayed a very good internal consistency reliability (Cronbach's alpha=Minimum=.833, Maximum=.848).

The study results demonstrate that seven factors accounted for 61.452% variance within the construct is by Processes of Change factor. All items meet the threshold at which factor loadings (pattern coefficients for oblique rotations) are considered meaningful (Tables 1 to 4).

Table 1: Participants' sociodemographic characteristics (N=560).

Variable	Frequency	Percent
Age (Years)		
18-21	323	57.7
22-25	170	30.4
26-28	67	11.9
Mean (SD): 21.39 ± 2.19		

Gender		
Male	203	36.3
Female	357	63.7
Marital Status		
Not married	426	76.1
Married	119	21.2
Divorced	7	1.3
Separated	5	0.9
Widow/widower	3	0.5
Grade		
First	182	32.5
Second	223	39.8
Third	67	12
Fourth	85	15.2
Fifth	3	0.5
Living Arrangement		
Live with parents	452	80.7
Live with mother	49	8.8
Live with father	12	2.1
Live with relatives	41	7.3
Live with friends	6	1.1
Residency		
Urban	280	50
Suburban	143	25.5
Rural	137	24.5

Table 2: Total variance explained for the stages of change (continuous measure) to adopt healthy diet.

	Total Variance Explained						
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadingsa**
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**
1	5.548	23.115	23.115	5.548	23.115	23.115	3.603
2	1.941	8.087	31.201	1.941	8.087	31.201	1.881
3	1.657	6.905	38.106	1.657	6.905	38.106	2.572
4	1.195	4.98	43.086	1.195	4.98	43.086	2.163
5	1.128	4.701	47.787	1.128	4.701	47.787	2.835
6	1.102	4.591	52.378	1.102	4.591	52.378	1.495
7	1.011	4.213	56.591	1.011	4.213	56.591	2.868
8	0.937	3.905	60.496				
9	0.887	3.695	64.191				
10	0.868	3.617	67.808				
11	0.752	3.131	70.939				
12	0.707	2.946	73.885				
13	0.682	2.84	76.725				
14	0.664	2.766	79.491				
15	0.624	2.6	82.091				
16	0.603	2.511	84.602				
17	0.574	2.392	86.994				
18	0.541	2.253	89.248				
19	0.508	2.117	91.365				
20	0.476	1.982	93.347				
21	0.466	1.943	95.29				
22	0.427	1.778	97.068				
23	0.408	1.701	98.769				
24	0.295	1.231	100				

Table 3: Item total statistics for the stages of change scale (continuous measure) to adopt healthy diet.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SOC1	68.58	159.883	0.239	0.186	0.843
SOC2	67.81	157.409	0.354	0.225	0.838
SOC3	68.5	160.894	0.215	0.269	0.844

SOC4	67.94	154.797	0.44	0.337	0.835
SOC5	67.86	154.235	0.44	0.336	0.835
SOC6	68.4	163.332	0.123	0.262	0.848
SOC7	67.82	155.51	0.41	0.279	0.836
SOC8	68.01	154.179	0.487	0.382	0.833
SOC9	68.04	157.213	0.387	0.265	0.837
SOC10	68.08	153.454	0.485	0.375	0.833
SOC11	68.24	159.167	0.308	0.22	0.84
SOC12	68.07	156.09	0.425	0.356	0.836
SOC13	67.98	155.007	0.46	0.296	0.834
SOC14	68.08	154.35	0.484	0.33	0.833
SOC15	67.93	155.607	0.453	0.392	0.835
SOC16	68	154.469	0.481	0.312	0.834
SOC17	68.04	155.452	0.44	0.411	0.835
SOC18	68.08	154.86	0.47	0.384	0.834
SOC19	67.95	157.152	0.365	0.318	0.838
SOC20	67.99	153.583	0.484	0.351	0.833
SOC21	67.93	158.183	0.327	0.308	0.839
SOC22	67.8	155.461	0.415	0.363	0.836
SOC23	67.9	154.576	0.466	0.322	0.834
SOC24	67.97	157.777	0.317	0.256	0.84

Table 4: Total variance explained for the stages of change to adopt healthy diet.

	Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadingsa
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.483	21.608	21.608	6.483	21.608	21.608	3.319
2	2.594	8.647	30.255	2.594	8.647	30.255	3.103
3	1.71	5.699	35.954	1.71	5.699	35.954	2.719
4	1.646	5.485	41.44	1.646	5.485	41.44	2.427
5	1.384	4.615	46.054	1.384	4.615	46.054	2.961
6	1.303	4.345	50.399	1.303	4.345	50.399	2.961
7	1.194	3.979	54.378	1.194	3.979	54.378	2.31
8	1.078	3.594	57.972	1.078	3.594	57.972	2.411
9	1.044	3.48	61.452	1.044	3.48	61.452	1.956
10	0.974	3.246	64.698				
11	0.889	2.963	67.66				
12	0.814	2.714	70.374				
13	0.781	2.605	72.979				
14	0.752	2.508	75.487				
15	0.713	2.377	77.864				
16	0.676	2.254	80.117				
17	0.617	2.057	82.174				
18	0.61	2.034	84.208				
19	0.549	1.831	86.039				
20	0.523	1.745	87.784				
21	0.494	1.647	89.431				
22	0.485	1.616	91.047				
23	0.426	1.421	92.468				
24	0.416	1.388	93.856				
25	0.384	1.28	95.136				
26	0.339	1.131	96.267				
27	0.306	1.02	97.287				
28	0.292	0.973	98.26				
29	0.275	0.917	99.177				
30	0.247	0.823	100				

DISCUSSION

The findings of the current study have significant theoretical and practical ramifications for how adopting a balanced diet might help prevent a variety of illnesses and health issues while also enhancing people's health. As a result, people's inclinations toward different dietary patterns have changed recently. To put these behaviors

into practice, people frequently need to make challenging modifications to the way they select and prepare their food. People vary in their preparedness and efficacy to adopt good eating habits that can help them avoid diseases and health issues while also improving their overall health for a variety of reasons.

Healthy eating habits that have the potential to prevent diseases and health issues and improve health will be less likely to be adopted by those who are not ready to take action. This difference in people's readiness to alter their behavior points to the urgent need for programs to be created that are specifically catered to readiness to increase efficacy and reach. The Trans theoretical Model of Behavior Change is one theory that can guide the development of multilevel, population-based, intervention and prevention programs that are tailored to the level of readiness. An important benefit of successfully applying the TTM to a behavior content area is the development of interventions that are appropriate for the entire population, independent of the level of preparedness. Additionally, methods created to gauge TTM components.

Stage of change measures

The Stage of Change assessments for adopting a healthy diet reflects a person's willingness to start (or keep starting) particular habits that are thought to aid in weight loss. This strategy is an expansion of the TTM's more sophisticated behavioral applications that target numerous behaviors and call for interpersonal communication (1) addresses appropriate eating habits that reduce people's risk of contracting a variety of diseases and/or health issues whose causes include dietary, including (2) indicates a complicated behavioral target that requires a person to readily engage in several "marker" behaviors as opposed to stopping one behavior (such as weight management) or refraining from negative behaviors (such as excessive screen time). Both of these characteristics make the work of establishing measurements more challenging because it is challenging to develop staging algorithms for this particular behavior. To deal with these complications, the URICA continuous staging method, a one-item categorical staging algorithm, and a three-item categorical algorithm were created and evaluated. The objectives were to discover which strategy best captured the data and to better understand the nature of willingness to engage in the marker behaviors. This study explicitly examined whether a three-item algorithm performed better than a relatively simple one-item approach.

URICA continuous staging

The URICA, a continuous tool for assessing readiness for behavior change, can be used to find patterns in scores on a number of criteria that correlate to several Stages of Change. In previously developed URICA assessment tools, Precontemplation, Contemplation, Action, and Relapse are all represented by one of four related components or dimensions. The URICA items, which assess a person's readiness to adopt a healthy diet, were

developed using these four criteria. Exploratory and confirmatory assessments of the items developed for URICA staging in the current study resulted in a seven-factor, correlated model with an unchanging number of questions per factor. These results corroborated theories developed from earlier applications of the URICA staging in other behavioral domains.

The confirmatory factor model's overall fit and reliability were satisfactory, notwithstanding a few items with low factor loadings. In order to determine whether any homogenous groups (clusters) of students existed that accurately represented the stages of transition based on their profiles of URICA dimension scores after the completion of the URICA measures, cluster analytic methodologies were applied. An application of the URICA staging adopted to gauge men's readiness to stop using violence in batterer therapy resulted in a six-cluster solution reflecting two Pre-contemplation stage profiles, Contemplation, Preparation, Action High Relapse, and Action Low Relapse stage profiles (Levevsque et al., 2000).

The current application's cluster analysis yielded four understandable stage clusters. There were parallels in the stages that each cluster seemed to portray, despite the fact that the number of clusters varied. The six groups from the domestic violence application were utilized as a guide to comprehend the current data. One cluster with high scores on the Precontemplation dimension and low scores on the other dimensions seemed to properly represent individuals in the Precontemplation Stage. The Contemplation Stage was best represented by the pattern of scores, although the second cluster had lower average means across all dimensions. Because the Preparation Stage had high means on both the Precontemplation and Action dimensions, it was put in the third cluster. The Action stage cluster ultimately displayed high

It was challenging to interpret the URICA clusters due to the experimental nature of the work described here and the lack of a comparison group with similar features. Since this is a new behavioral application with a population that is distinct from other research groups, this study was unable to duplicate Stage cluster solutions established in other behavioral fields. The likelihood that the measures developed do not accurately assess all of the URICA characteristics and would benefit from further measurement development with a more diversified sample of samples could be used to explain why the cluster structures observed here differ from those in other applications. It is also possible that the homogeneous stage clusters are related to the new behavior area and markedly different populations.

The sample of university students included in this study, which was not drawn from a clinical population, generally indicated a low level of preparedness to adopt a healthy diet. It is evident from looking at the kids' readiness ratings by URICA stage that the Contemplation Stage pupils reported relatively poor preparedness to adopt a healthy diet. Given that they are not exhibiting unhealthy

eating patterns, students in the Contemplation Stage may not necessarily need to change their eating habits. Nonetheless, these students are open to doing so if the situation calls for it. On the other hand, children in the Precontemplation Stage do report more harmful eating practices, indicating that they might not be.

The relationships between the URICA Stages and the pertinent TTM elements, including Decisional Balance and Self-Efficacy, are generally consistent with URICA's findings in other behavioral applications. Even the unweighted study, which examined how Stage and Pros and Cons related to one another, showed that Pros should increase from Precontemplation to Action while Cons should decrease, with a crossover between Contemplation and Preparation. Results on the Self-Efficacy Scales as well as ratings of the students' dietary practices that maintain their optimal health and ward off illness and/or disease showed expected rises from lower to higher Stages of Change. Because this study was exploratory, the results are promising and suggest that additional research is required to fully assess the utility of the URICA in this behavioral area.

CONCLUSION

The TTM and behavioral measures used in this study are a great place to start when developing assessment and intervention materials that can be utilized for both prevention with a non-clinical population and in treatment settings with students present to manage an unhealthy diet.

The potential to address varied levels of readiness to engage in healthy food behaviors makes stage-matched and correctly customized interventions more likely to be effective with different populations.

RECOMMENDATION

Next intervention studies can use experimental manipulation to test the construct validity of these scales, with Contrary to participants in the control group, those allocated to the intervention condition were anticipated to have enhanced valuation of the Pros, decreased concern about the Cons, and increased self-efficacy.

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