

## Validity and Reliability of Dietary Pattern Inventory for Secondary School Children

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### ABSTRACT

Inadequate dietary habit is a common issue in Pakistani school going children which leads to poor nutritional status. Nutritional status can be determined by questionnaire whereas no valid and reliable tool exists to determine dietary patterns of school going Pakistani children. To determine the dietary pattern of school going Pakistani children, a questionnaire was designed by the title of Dietary Pattern Inventory to collect data in ordinal scale. However, questionnaire needs validation. This pilot study was conducted with the aim to validate the designed questionnaire.

**KEYWORDS:** Malnutrition, Students, Questionnaire, Valid, Score, Consistency

### HOW TO CITE THIS:

Khan B, Khaliq AS, Azhar I. Validity and Reliability of Dietary Pattern Inventory for Secondary School Children. Isra Med J. 2018; 10(6): 371-372.

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### INTRODUCTION

It is a bleak reality that proportions of malnourished children are around 70% in Asia. In south Asia, 1/3<sup>rd</sup> of pre-schoolers are underweight<sup>1</sup>. Similarly in Pakistan, 53.38% children have stunted growth and 33.03% children less than age 5 years are under weight<sup>2</sup>. Evidences pretend that nutritional status in Pakistan and South Asia is poor. Cases of goiter due to deficiency of iodine are also highest in Pakistani children followed by India and Indonesia<sup>1</sup>. Undernourished children are more susceptible to infectious diseases compare to well-nourished<sup>3</sup>. Death rate is 54% in malnourished children in developing countries<sup>3</sup>. It is also reported that in South Asia over 50% children are malnourished and half of them are living in Pakistan, India and Bangladesh<sup>4</sup>. Evidence unveil that major factors contributing malnutrition among Pakistani children are large family sizes, low income of families and low literacy of

mothers<sup>5</sup>. Polluted water and poor sanitary conditions are also environmental factors contributing malnutrition in Pakistan<sup>6</sup>. A questionnaire is required to determine the major reasons of poor health status of Pakistani children based upon their dietary habits. Unfortunately, no valid and reliable questionnaire exists to determine dietary patterns of school going Pakistani children. For this reason, a questionnaire was designed by the title of Dietary Pattern Inventory to collect data in ordinal scale. It is imperative to know that questionnaire would not be reliable unless it is validated<sup>7</sup>, that is why to validate the questionnaire, a pilot study was designed and data has been collected from 35 students of different grades in schools of Karachi.

### METHODOLOGY

In order to validate<sup>7</sup> the questionnaire, Cross-sectional survey was conducted from 1<sup>st</sup> March to 30<sup>th</sup> May 2018 i.e. three months. Data has been collected from 35 students of different grades in schools of Karachi. Inclusion Criteria comprises of secondary school students from 12 to 16 years and students of Primary school or with congenital anomalies, GIT disorders were excluded from the study. The questionnaire was designed in ordinal scale with the title of Dietary Pattern Inventory. Dietary Pattern Inventory contains 15 questions and 28 items, targeted to collect information from students about their breakfast habits, type of meals, contribution of vegetables and fruits in their diet, source of diet from school canteen or homemade and to establish a document to screen for physical and mental wellbeing of the school going children based on their diet. Thirty five school students of different grades and from different zones of the city filled the questionnaire. Convenient sampling technique was employed to conduct this pilot study. Questionnaire comprises of 15 questions and 28 items i.e. how often do you have breakfast in a week? How

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Received for Publication: 11-08-18

1<sup>st</sup> Revision of Manuscript: 19-09-18

2<sup>nd</sup> Revision of Manuscript: 11-11-18

3<sup>rd</sup> Revision of Manuscript: 22-11-18

Accepted for Publication: 08-12-18

often do you consume raw vegetables or salad with your meal? How often do you eat any one seasonal fruit? How often do you visit to your doctor? How often did you eat serving of these foods in the last 4 weeks? Corns, peas, tomatoes, carrots, broccoli, spinach, French fries, mixed vegetables, nuts, pop corns, soda or soft drinks, bananas, apples, squash or orange juice, How often do your friends compliment your dietary habits? Do you feel difficulty in doing the class tasks? How much you are engaged in physical activity or sports at the school? How easily do you complete your tasks in the given time? How often do you feel bored or exhausted? Do your teachers compliment your class performance? How often do you eat from school's canteen? How much is your water consumption in a day compare to 08 glasses per day? How often do you eat cooked vegetables in your meals? Do you think that daily consumption of fruits and vegetables may improve your physical and mental health in many ways? Reliability analysis was applied from SPSS 22 version software to evaluate validity and reliability of Dietary Pattern Inventory by determining Cronbach's Alpha score<sup>8</sup>. After applying reliability test, all 28 items of questionnaire achieved score of Cronbach's Alpha more than 0.70, which proves good and acceptable consistency of dietary pattern inventory.

## RESULTS

Cronbach's Alpha score based on Standardize all 28 items = 0.801 and without Standardized items = 0.785. Cronbach's Alpha scores of item 1 = 0.791, item 2 = 0.798, item 3 = 0.725, item 4 = 0.795, item 5i = 0.792, item 5ii = 0.798, item 5iii = 0.794, item 5iv = 0.787, item 5v = 0.793, item 5vi = 0.797, item 5vii = 0.822, item 5viii = 0.787, item 5ix = 0.786, 5x = 0.817, item 5xi = 0.838, item 5xii = 0.870, item 5xiii = 0.781, item 5xiv = 0.768, item 6 = 0.701, item 7 = 0.715, item 8 = 0.795, item 9 = 0.720, item 10 = 0.733, item 11 = 0.895, item 12 = 0.714, item 13 = 0.711, item 14 = 0.706, and item 15 = 0.704.

## DISCUSSION

Degree of validity and reliability of any questionnaire depends upon Cronbach's Alpha score in pilot study. JA Gliem et al. mentioned that questionnaire has excellent validity if Cronbach's alpha score is  $\geq 0.9$ , good if  $\geq 0.8 - 0.9$ , acceptable if  $\geq 0.7 - 0.8$ , questionable if  $\geq 0.6 - 0.7$ , poor if  $\geq 0.5 - 0.6$ . Current study reveals that combined all twenty eight items have acceptable to good validity and reliability based upon score of 0.785. However, Score of Cronbach's Alpha of individual items determined that question-5(vii), question-5(x), question-5(xi), question-5(xii) and question-11 have good reliability, while rest of the questions are in the range of acceptable reliability. Reliability statistics of all 28 items on standardized items is 0.801 which proved good consistency.

## CONCLUSION

The questionnaire is valid and reliable for the use in secondary school children. Magnitude of applicability of designed questionnaire based upon Cronbach's Alpha score of all 28 items combined and individually shows internal consistency.

## CONTRIBUTION OF AUTHORS

Khan B: Study and questionnaire designing, Literature survey.  
Khaliq SA: Idea generation, Data analysis, Statistical analysis, Manuscript writing and interpretation of results.  
Azhar I: Manuscript final proof reading, Data analysis and Conclusion of study.

**Disclaimer:** None.

**Conflict of Interest:** None.

**Source of Funding:** None.

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