

CHAPTER III

METHODOLOGY

The present study was undertaken with a view to evaluate the nutrition knowledge and practices among wrestlers in Maharashtra. Although standard procedure was followed to conduct this study, this chapter describes systematically the methodology of research that contains nature of the design, population and sample, variables, tools used for research, apparatus or instruments, procedure, statistical tools etc.

3.1 Research Design

Since there was no questionnaire available to assess the knowledge of nutritional practices especially for wrestlers in Maharashtra, the present researcher developed a standard questionnaire in the first year. Further, in the next year a survey research was conducted by administering this inventory on a large population (20%) of wrestlers in Maharashtra to assess the real status of nutritional practices of the wrestlers in residing in the state of Maharashtra. Thus, the present study is a developmental -cum- survey research.¹

3.2 Method

3.2.1 Population

The researcher could locate the wrestlers of different weight categories (96+, 96, 84, 74, 66, 60, and 55 Kgs.) practicing in all the SAI Centers and adopted Akharas situated at Sangli, Kolhapur, Pune, Satara, Solapur, Aurangabad and Nashik in Maharashtra as population.

¹ M.L. Kamlesh,, Methodology of research in physical education and sports. (New Delhi: Metropolitan Book Co. Pvt Ltd., 1986), pp.15-70.

3.2.2 Method of Development of Questionnaire

The questionnaire “Knowledge of Nutrition and its practices for Wrestlers” has been developed considering three phases:

- Preliminary phase-I,
- Middle phase-II, and
- Final phase-III.

A) Methods of Preliminary Phase-I

The researcher first studied various aspects that were needed for preparation of questionnaires. The questionnaire on “Nutritional Knowledge and Practices for Wrestlers” was developed with four major dimensions viz., general knowledge on nutrition, food, diet and vitamins/minerals and was shown to experts in the field of physical education research and sports nutritionist. Primarily, the questionnaire had 80 questions. The questionnaire was modified by following standard procedures (Bhattacharya *et al.*, 1978). Considering this process, the questionnaire was sent to three renowned nutritionists and three psychologists in Pune city for modification in questions, if any. This was a 3-point scale i.e., each question has three alternative answers. Thus, the face validity of the questionnaire was maintained. The suggestions from these experts were incorporated and then the questionnaire (having 70 questions) was finalized for first try-out.

After modification, the questionnaire was administered on the small sample (40 wrestlers) on try-out basis. The researcher noted down the difficulties faced by the sample-subjects while filling up the questionnaire. The time taken by the sample-subjects was also noted. The environment to fill up the questionnaire was conducive.

The data, obtained from the sample questions, were analyzed for difficulties faced by the wrestlers during data collection, which were discussed with the panel of experts and modified the questionnaire accordingly. After one month is over, the questionnaire was again administered on the same sample and the test-retest reliability ($r=0.48$ to 0.65) ensured the questionnaire's reliability. Since opinions of many experts were incorporated, the questionnaires seem to have content validity. This ensures the preliminary form of the questionnaire.

B) Methods of Middle Phase-II

Now the questionnaire was administered on a large sample ($n=1120$) from the state of Maharashtra.

Sample

Data were collected randomly from a total 16 wrestling centres (i.e., SAI centre and adopted Akharas) situated in the state of Maharashtra. It is evident that ten male wrestlers from each weight category from every wrestling centre participated in this study (Table 3.1). Thus, the total participants (sample) in this survey were 1120 wrestlers. The distribution of the participants is presented in table 3.1.

Table 3.1

Blueprint of subjects' distribution

Sr. No.	Name of Akharas / Centres in Maharashtra	No. of Subjects in different Weight categories						
		96+	96	84	74	66	60	55
1.	Motibag, Kolhapur	10	10	10	10	10	10	10
2.	Hanuman Akhada, Atpadi	10	10	10	10	10	10	10
3.	Vasant Dada Kusti Kendra, Sangli	10	10	10	10	10	10	10
4.	Abhijit Kadam Wrestling Center, Kdegaon	10	10	10	10	10	10	10
5.	Markand Kusti Kendra, Indapur	10	10	10	10	10	10	10
6.	Tanaji Mane Kusti Kendra, Yelapur	10	10	10	10	10	10	10
7.	Gangavesh Talim, Kolhapur	10	10	10	10	10	10	10
8.	Mamasaheb Mohol Wrestling Center, Pune	10	10	10	10	10	10	10
9.	International Wrestling Center, Pune	10	10	10	10	10	10	10
10.	Gokul Vastad Talim, Pune	10	10	10	10	10	10	10
11.	Gulshe Talim, Pune	10	10	10	10	10	10	10
12.	Satara Talim Sangh, Satara	10	10	10	10	10	10	10
13.	Sai Center, Mumbai	10	10	10	10	10	10	10
14.	Hanuman Talim Mandal, Nashik	10	10	10	10	10	10	10
15.	Shahupuri Talim, Kolhapur	10	10	10	10	10	10	10
16.	Sarkari Talim, Sangli	10	10	10	10	10	10	10
	Total	160	160	160	160	160	160	160
	Total Sample	1120						

Item Analysis was then performed (Guilford & Fruchter, 1973).² The values of item difficulty and item discrimination of each question was analyzed. As per reference of Bhattacharyya *et al.*, (1977), the value of “item-difficulty-index (cP)” of each test-item lies in between the value 0.5 to 0.7 was accepted and the test-item bearing such value has been included into the test. The values of item-discrimination (ULI i.e., Upper-Lower Index) of each item lower than 0.33 were not included in the test (Bhattacharyya, *et al.*, 1977). Further, the split half reliability coefficient was then determined. For this, the scores of each item of each group were given serial numbers and they were then split into two halves. The first half contained the score of odd serial number and the second half contained the score of even serial numbers. The split half reliability of the Questionnaire was also determined statistically ($r=0.68$, $p<0.01$). Finally, the questionnaire was having 66 items/ questions.

C) Methods of Final Phase-III

After establishing the questionnaire’s reliability and validity and finalizing the dimension-wise test items (questions), the norms have been developed by testing the normality of the data. Finally the norms have been graded considering Likert’s Five points scale.

3.2.3 Method of Survey

Survey of the Wrestlers’ “knowledge on nutrition and its practices” has been done by administering the newly developed questionnaire on seven hundred wrestlers ($n=1120$) of different weight category from SAI centres and Akharas in Maharashtra. There were seven categories of wrestlers (96+kg, 96 kg, 84 kg, 74 kg, 66 kg, 60 kg, 55 kg) and 160 wrestlers from each category were selected.

² J.P. Guilford, & B. Fruchter, Fundamental statistics in psychology and education. (New Delhi: McGraw Hill Book Co., 1973), pp.135-157.

Variables and Tools used

This study considered only one variable i.e., status of nutritional knowledge and practices among wrestlers in Maharashtra. To assess the variable the researcher administered the newly developed tool “Knowledge of Nutrition and its practices” on the sample. The tool (i.e., questionnaire) was found reliable ($r=0.68$, $p<0.01$) and valid. The scoring was done in points.

Procedure

Firstly, the researcher has taken permission from authorities of Akharas for data collection. Further, consent from all the participants was taken prior to data collection.

The data were collected during April 2011 to June 2011. The subjects were requested to fill up the questionnaires in the presence of the present investigator. The researcher noted that the room atmosphere, where the questionnaire administered, was favorable and conducive. All the subjects were found very peaceful to respond each question in the questionnaires.

3.3 Statistical Analysis

a) For Development of the Questionnaire

- Descriptive statistics was employed.
- Test-retest reliability of the preliminary form of the questionnaire was calculated.
- Item analysis was performed in terms of *item-difficulty and item discrimination*.

- Content validity and split half reliability were finally established for the questionnaire.
- Normality of the data was tested in terms of value of skewness and kurtosis. Then percentile norms were established. Finally, gradation of the data on the questionnaire was done on the basis of Likert's Five point scale.

b) For Analysis of Survey data:

- Descriptive statistics was applied to process the data.
- Percentage-wise analysis was employed to assess the status of Nutritional Knowledge and Practices for Wrestlers in Maharashtra.
- Further, Chi-Square test was done to find differences in the status of Nutritional Knowledge and Practices for Wrestlers belonging to different weight categories (96+, 96, 84, 74, 66, 60 and 55 Kilograms).
- t-test was then employed to find out the significant difference between required intake of calories and actual calorie intake of the wrestlers in the state of Maharashtra.