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A Study of Nutritional Knowledge and Diet Practices among the Wrestlers in Maharashtra

Dr. Netaji Jadhav

Director of Sports, Bharati Vidyapeeth University, Pune

ABSTRACT

A sport is an integral part of human life. Wrestling is one of the ancient sports events. Most of the people are playing wrestling to build their career. Since everyone has started taking part in competitive wrestling there is very tough competition in wrestling. Therefore to achieve high performance and become successful in wrestling everyone must have the knowledge of all those factors on which performance depends to large extent. There are so many factors and Nutrition is one of the most important factors.

Initially Nutrition, a science of food was limited to just prevention of deficiency, disease and maintenance of general health. But today nutrition has become an important component to improve the sports performance. To keep our body cells functioning properly they must be supplied with proper amount and type of food having required nutrients as per individual's requirement.

Balanced diet is important for recovery during training to tackle training load in each & every training session. The meal before & after competition is very important.

Wrestling is weight category sports therefore balanced diet is very important to gain & lose weight in minimum possible time without affecting performance..

Successful wrestlers know that good nutrition is an essential component of their daily training. They realise that good eating habits help them to compete at a much higher level of competitions.

Thus, nutritional knowledge and Diet practices are very important for wrestlers to achieve high performance in competitions

METHOD

The present study was undertaken with a view to evaluate the nutrition knowledge and Diet practices among the wrestlers in Maharashtra. Although standard procedure was followed to conduct this study.

Method of Development of Questionnaire

The questionnaire on "Nutritional Knowledge and Diet Practices for Wrestlers" was developed with four major dimensions 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.

Population

The wrestlers of different weight categories were selected (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.

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

Blueprint of subjects' distribution

Sr.No.	No. of Subjects in different Weight categories						
	96+	**96**	**84**	**74**	**66**	**60**	**55**
1.	10	10	10	10	10	10	10
2.	10	10	10	10	10	10	10
3.	10	10	10	10	10	10	10
4.	10	10	10	10	10	10	10
5.	10	10	10	10	10	10	10
6.	10	10	10	10	10	10	10
7.	10	10	10	10	10	10	10
8.	10	10	10	10	10	10	10
9.	10	10	10	10	10	10	10
10.	10	10	10	10	10	10	10
11.	10	10	10	10	10	10	10
12.	10	10	10	10	10	10	10
13.	10	10	10	10	10	10	10
14.	10	10	10	10	10	10	10
15.	10	10	10	10	10	10	10
16.	10	10	10	10	10	10	10
Total	160	160	160	160	160	160	160
Total	**1120**						

Item Analysis was then performed (Guilford & Fruchter, 1973). 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.

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.

Method of Survey

Survey of the Wrestlers' "knowledge on nutrition and its practices" has been done by administering the newly developed questionnaire on 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.

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

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.

Statistical Analysis

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.

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.

The results of the percentile norms presented above were further substantiated to find out grade in the performance in the newly developed questionnaire. However, grading followed by percentile method was derived for the subjects using standard technique (Verducci, 1980). The derivation of grade in the test-items has been presented in Table.

The grading was computed on the basis of the Likert's Five Point Scale. The raw score achieved in the questionnaire can be well interpreted easily so that an individual's performance score is either excellent or good or average or fair or poor can easily be determined.

Grading Scale of Performance in the Questionnaire
(Knowledge of Nutrition and its practices for Wrestlers)

Grades	Raw Scores (achieved in the questionnaire)	**Grades**
Excellent (A)	**129.76 & above**	Excellent (A)
Good (B)	**113.39-139.99**	Good (B)
Average (C)	**81.45-112.99**	Average (C)
Fair (D)	**68.72-81.44**	Fair (D)
Poor (E)	**68.71 & below**	Poor (E)

Status of knowledge on nutrition of Wrestlers in Maharashtra

Categories of Wrestlers	knowledge on nutrition (M±SD)
96+ kg	102.05 (±13.23)
96 kg	106.48 (±16.54)
84 kg	097.62 (±11.60)
74 kg	110.68 (±13.25)
66 kg	105.24 (±12.55)
60 kg	112.03 (±13.72)
55 kg	107.37 (±12.26)

The norms (as developed in this study i.e., vide Table 4.5) indicate that the range of average status is from **81.45 to 112.99**. It is amazing that mean performance of all the participated wrestlers falls within the range of "average status". Thus, the null hypothesis – *"HO_1: Nutritional knowledge and practices among the wrestlers in Maharashtra may not in vogue as per the requirement"* as formulated in this study has been sustained.

Percentage-wise status of Wrestlers' knowledge on Nutrition

Percentage-wise status of **"knowledge on nutrition"** among the wrestlers of selected weight categories has been presented in Table 4.7.

The result of revealed that –

- among 96+kg of wrestlers category, 80.24% had poor "Knowledge on nutrition", whereas only 1.50% had excellent knowledge.
- among 96 kg of wrestlers category, 78.86% had poor "Knowledge on nutrition", whereas only 1.78% had excellent knowledge.
- among 84 kg of wrestlers category, 72.45% had poor "Knowledge on nutrition", whereas only 2.55% had excellent knowledge.
- among 74 kg of wrestlers category, 66.83% had poor "Knowledge on nutrition", whereas only 4.17% had excellent knowledge.
- among 66 kg of wrestlers category, 70.34% had poor "Knowledge on nutrition", whereas only 3.50% had excellent knowledge.
- among 60 kg of wrestlers category, 55.85% had poor "Knowledge on nutrition", whereas only 3.00% had excellent knowledge.
- among 55 kg of wrestlers category, 35.00% had poor "Knowledge on nutrition", whereas only 1.56% had excellent knowledge.

In average, overall results revealed that 65.66% of the wrestlers in Maharashtra had poor knowledge on nutrition, whereas only 2.58% of them had excellent knowledge. Finally, 72.83% of the wrestlers had below-average level of knowledge on nutrition and only 7.88% of them had above-average level. It seems majority of the wrestlers in Maharashtra do not possess proper knowledge on nutrition and its practices

Status (%) of wrestlers' knowledge on nutrition and its practices

Wt Categories of Wrestlers	Knowledge on nutrition of the Wrestlers (%)				
	Excellent knowledge	**Good knowledge**	**Average knowledge**	**Fair knowledge**	**Poor knowledge**
96+ kg	1.50	1.25	10.25	6.76	80.24
96 kg	1.78	2.22	15.14	2.00	78.86
84 kg	2.55	1.00	20.62	3.38	72.45
74 kg	4.17	3.88	23.00	2.12	66.83
66 kg	3.50	5.66	12.50	8.00	70.34
60 kg	3.00	10.68	18.32	12.15	55.85
55 kg	1.56	12.44	35.20	15.80	35.00
Average	2.58	5.30	19.29	7.17	65.66

Further, the result of comparison of status of **"knowledge of nutrition"** among the selected weight categories has been presented in Table 4.8. The result of chi square (X^2) test revealed that there was no significance difference in **"knowledge of nutrition"** between different weight categories of wrestlers viz., 96+ kg Vs 96 kg (X^2=1.34, p>0.05), 96+ kg Vs 84 kg (X^2=1.47, p>0.05), 96+ kg Vs 74 kg (X^2=1.44, p>0.05), 96+ kg Vs 66 kg (X^2=1.40, p>0.05), 96+ kg

Vs 60 kg (X^2=1.41, p>0.05), 96+ kg Vs 55 kg (X^2=1.45, p>0.05), 96 kg Vs 84 kg (X^2=1.47, p>0.05), 96 kg Vs 74 kg (X^2=1.49, p>0.05), 96 kg Vs 66 kg (X^2=1.46, p>0.05), 96 kg Vs 60 kg (X^2=1.33, p>0.05), 96 kg Vs 55 kg (X^2=1.46, p>0.05), 84 kg Vs 74 kg (X^2=1.33, p>0.05), 84 kg Vs 66 kg, (X^2=1.45, p>0.05) 84 kg Vs 60 kg (X^2=1.36, p>0.05), 84 kg Vs 55 kg (X^2=1.39, p>0.05), 74 kg Vs 66 kg (X^2=1.42, p>0.05), 74 kg Vs 60 kg (X^2=1.35, p>0.05), 74 kg Vs 55 kg (X^2=1.41, p>0.05), 66 kg Vs 60 kg (X^2=1.29, p>0.05), and 66 kg Vs 55 kg (X^2=1.3134, p>0.05). These results indicate that there is no significant difference of level of nutrition and its practices among the wrestlers of different weight categories. This, in fact, supports the null hypothesis-"*HO_2: There will be no difference in nutritional status of the wrestlers of different weight categories*." Thus, the null hypothesis HO_2 as formulated in this study has been sustained (Fig.4.1).

Comparative status of knowledge on nutrition and its practices among the wrestlers of different weight categories

Categories of Wrestlers	**knowledge on nutrition** (X^2 test)
96+ kg Vs 96 kg	1.34
96+ kg Vs 84 kg	1.47
96+ kg Vs 74 kg	1.44
96+ kg Vs 66 kg	1.40
96+ kg Vs 60 kg	1.41
96+ kg Vs 55 kg	1.45
96 kg Vs 84 kg	1.33
96 kg Vs 74 kg	1.49
96 kg Vs 66 kg	1.46
96 kg Vs 60 kg	1.43
96 kg Vs 55 kg	1.46
84 kg Vs 74 kg	1.33
84 kg Vs 66 kg	1.45
84 kg Vs 60 kg	1.36
84 kg Vs 55 kg	1.39
74 kg Vs 66 kg	1.42
74 kg Vs 60 kg	1.35
74 kg Vs 55 kg	1.41
66 kg Vs 60 kg	1.29
66 kg Vs 55 kg	1.31

*p<0.05, **p<0.01

To summarize, the status on **"knowledge of nutrition"** among the wrestlers in Maharashtra is poor, which may affect the balance of calorie intake.

MAJOR FINDINGS

- The test on Wrestlers' knowledge on nutrition revealed a total 61 items representing four major dimensions. The test has content validity and reliability coefficient was 0.68 ($p<0.01$). The norms established were gradable accordingly to Likert's five points scale viz., excellent knowledge, good knowledge, average knowledge, fair knowledge and poor knowledge.

- The survey study indicates that 72.83% of the wrestlers had below-average level of knowledge on nutrition and only 7.88% of them had above-average level. Chi square test indicates that the wrestlers of different weight categories also exhibited poor knowledge on nutrition and its practices. It seems majority of the wrestlers in Maharashtra do not possess proper knowledge on nutrition and its practices.

- Since the wrestlers had poor knowledge on nutrition, it is evident that their calorie intake is far from the required calorie. The result of t-test further confirmed the same.

- Almost all wrestlers are not taking pre workout meal.
- All wrestlers are taking excessive fat in diet.
- Nobody is taking Vitamin supplement which is very important.

- Almost all wrestlers delay the post workout meal more than 30 to 45 minutes.

- Wrestlers eat fruits / fruits Juice after meal, which is actually to be taken immediate after workout.

- Irregularity is observed in taking meal with special reference to time gap between two meals. Time gap between two meals is more than four hours.

CONCLUSION

This is a systematic investigation which warrants the following conclusions:

- The test on "Wrestlers' knowledge on Nutrition," as standardized in this study is reliable and valid. The norms as developed are gradable and would help to accurately assess the actual status of Wrestlers' knowledge on nutrition.

- Majority of the wrestlers in Maharashtra do not possess proper knowledge on nutrition and its practices.

- Due to improper knowledge on nutrition, the Wrestlers of Maharashtra consume diet with excessive Calorie.

RECOMMENDATION

On the basis of the results and conclusion, this study made following recommendations:

- The knowledge-test on nutrition as developed in this study is recommended for assessing nutritional status and practices of the wrestlers in Maharashtra. This would without doubt help to enhance their performance.

- There is a need to have a strategy for developing awareness on nutrition and calorie intake among the wrestlers in Maharashtra.

- The wrestling coaches must update their own knowledge on nutrition and calorie intake so that the same should be imparted to the students of wrestling.

- Development of a standard knowledge-test on nutrition for the wrestlers of the country is recommended for further study.

- Since almost all Wrestlers are not taking pre workout meal, which is essentially required, it is recommended for the same to avoid muscle protein breakdown during training.
- The results revealed that wrestlers are taking excessive fat in diet that produces excessive calories, which in fact increase body fat leading to decrease in performance. It is therefore recommended to control the diet which contents fat and suggested for intake of required fat in diet.

- Since Vitamins are required for early recovery and to accelerated the energy metabolism and other enzymatic activity. It is therefore recommended to consume Vit 'B' in pre workout mea and Vit 'C' & 'E' in after workout meal.

- It is recommended that all wrestlers may consume post workout meal within 10 minutes after workout for early recovery.

- It is recommended that all wrestlers may eat fruits/fruit juice immediately after workout.

- The wrestlers are suggested to maintain the regularity [time gap] in between two meals. They should note that this gap should not be more than three to four hours.

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