



Effect of Locus of Control on Eating Practices and Nutrition Awareness among Young Adolescent Sportspersons in Kerala, India

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The locus of control refers to how one perceives personal responsibility for success or failure. This study examines how the locus of control affects eating practices and nutrition awareness among young adolescent sportspersons in Kerala. In this study, 314 (186 Male, 128 Female) (n=314) young adolescent sportspersons ranging in age from 13 to 24 years were selected. Purposive random sampling technique was used. For collecting information on eating practices, data on food consumption pattern, food frequency method was taken. Nutrition awareness questions were also validated and the information was collected. To gather psychological data, Rotter's (1966) Internal-External locus of control was used. Statistical analysis was carried out using descriptive statistics

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(mean, frequency, and standard deviation), one-way ANOVA, and post-hoc tests such as Scheffe's test. A one-way ANOVA found a statistically significant difference in eating patterns (food consumption pattern and food frequency method) and nutrition awareness between at least two groups $F(3,310)=[3.385]$, $p=.018$, $F(3,310)=[5.124]$, $p=.002$, and $F(3,310)=[4.620]$, $p=.004$ respectively. The Locus of Control, .6% (2) of the sportspersons had very strong external LOC, 7.6% (24) had external LOC, the majority of the sportspersons 56.7% (178) had both internal and external LOC and 35% (110) were having internal LOC. The mean score for nutrition awareness was 4.15 ± 1.593 , with 16.24% ($n=51$) scoring in the good category. The locus of control affects the eating practices of athletes by shaping their beliefs about personal responsibility and control over nutrition. A balanced approach incorporating internal and external factors and individualized strategies is often the key to enhancing performance and overall health.

Keywords: Locus of control; eating practices; nutrition awareness; food consumption pattern; sportspersons.

1. INTRODUCTION

In the realm of sports psychology and nutrition, understanding the psychological factors influencing athletes' eating practices is paramount. One such factor of interest is the locus of control, which refers to individuals' beliefs regarding the extent to which they can control events in their lives. This concept has been extensively studied in various fields, including health, education, and psychology, but its association with eating behaviors among sportspersons remains relatively underexplored, particularly within the context of Kerala, India.

Kerala, renowned for its vibrant sporting culture, boasts a diverse range of athletes excelling in various disciplines, including football, cricket, athletics, and martial arts. However, despite the prominence of sports in the state, there is a scarcity of research addressing the psychosocial aspects of athletes' dietary habits, which are integral to their overall performance and well-being.

Drawing upon theoretical frameworks such as Rotter's [1] concept of locus of control and Bandura's (1986) social cognitive theory, this study employs a mixed-methods approach, combining quantitative surveys with qualitative interviews, to comprehensively explore the interplay between psychological factors and dietary choices among Kerala's sportspersons.

In the context of eating practices in sportspersons, an internal locus of control is generally associated with a greater tendency to engage in healthy eating behaviours. This is because people with an internal locus of control tend to believe that their choices and behaviors are the primary drivers of their health outcomes,

and therefore they are more likely to take personal responsibility for their diet and nutrition. In contrast, people with an external locus of control may be more likely to attribute their eating behaviours to external factors, such as the availability of food or social pressures, and therefore may have a harder time making healthy choices.

Good eating habits and adequate food choices are essential for maintaining a healthy lifestyle and for youth health [2]. The quick changes in the physical and mental development of young adults make them vulnerable to bad eating habits. People perform better physically and mentally if they consume rational nutrition. It is also possible to prevent some diseases with a proper diet and rhythm daily. The locus of control affects the eating practices of athletes by shaping their beliefs about personal responsibility and control over nutrition [3].

Students who had a better sense of internal locus of control ate healthier and drank more water. Individuals who believe in healthy eating have become more mindful of nutrition. Furthermore, higher ratings in the external locus of control component (beliefs in luck or chance) were linked to poor eating habits, inadequate hydration, and a lack of nutritional awareness. The nutritional knowledge levels of female athletes were higher than those of male athletes when compared across genders [4].

However, it is crucial to highlight that the relationship between locus of control and eating habits is complex and can be influenced by several factors, including individual differences in motivation, self-efficacy, and social support. Additionally, while an internal locus of control is generally associated with positive health

outcomes, it is not necessarily a guarantee of good health, as other factors such as genetics, environment, and lifestyle also play a role in determining health outcomes.

Even though no study has examined the effect of locus of control on eating practices and nutrition awareness specifically, there is some evidence in the literature that locus of control is associated with overall well-being [5]. The purpose of this study is to investigate the effect of locus of control on the eating practices and nutrition awareness of young sportspersons in Kerala between the ages of 13 and 27.

2. METHODOLOGY

2.1 Selection of Subjects

In this study, 314 sportspersons (n=314) aged 13 to 27 were chosen from some institutions in Kerala (186 men and 128 women). Purposive random sampling method was adopted. On the initial visit, researchers described the study's goal to eligible participants and enabled them to ask any questions.

2.2 Questionnaire Design and Scoring

To gather information on eating habits, questions were posed under two categories: food consumption patterns and frequency of meals. Questions about nutrition awareness were also included in the questionnaire, which was validated and its reliability was assessed. To gather psychological data, Locus of Control questionnaire was adopted. The concept of "locus of control" (LOC) refers to "Where (locus) is your sense of control in the world—inside or outside?" was coined by Julian Rotter, a behaviour observer [1]. To gauge people's beliefs about their control (internal) and their perception of the influence of outside causes on their circumstances (external), Rotter created a forced-choice, 29-question test. Different applications of Rotter's theory, known as the locus of control, have been made to explain results in a variety of contexts, ranging from fostering healthy marriages to improving golf performance to corporate leadership. Business organisations have used test results to increase retention, review hiring methods, study and attempt to decrease the effects of stress, boost job satisfaction, and urge employees to assume personal responsibility for their actions.

The locus of control concept is based on what psychologists call social learning theory.

According to social learning theory, expectations are reinforced when the anticipated events or behaviours occur in the future. In other words, if you expect something to happen and it does, your expectation grows, and if it does not, your anticipation decreases. Rotter asserted that the outcome is governed by one's belief in their power to change the reasons for reinforcement. He claimed that those who believe their actions or qualities impact or cause events have an internal locus of control. People who feel that reinforcement for their activities is due to luck, fate, chance, or other factors outside their control have an external locus of control.

The results are scored along the following scale:

- 0 - 15 - Very strong external locus of control
- 20 - 35 - External locus of control
- 40 - 60 - Both external and internal locus of control
- 65 - 80 - Internal locus of control
- 85 - 100 - Very strong internal locus of control

According to a large body of research on the locus of control, persons who believe they can control their circumstances are more likely to be aware of actions and knowledge that can assist in their success. They strive to improve their circumstances and place a larger value on their abilities. Knowing whether employees have an internal or external locus of control is useful in guiding their development. Stress management training, for example, could help externals develop better coping abilities, hence increasing job satisfaction and retention within the organisation. Understanding one's personality features can lead to positive adjustments in both work and play.

2.3 Interview and Data Collection

The researcher and assistant were involved in the data collection process. After informing each participant of the study's objectives, relevance, confidentiality, and participant rights, the researcher and assistant obtain informed written consent from them. The data was then collected, and the athletes completed the form in about ten to fifteen minutes.

2.4 Statistical Analysis

The data was entered into an Excel spreadsheet and analysed using the Statistical Package for the Social Sciences (SPSS), version 20. An ANOVA study was utilised to look at the

relationship between eating habits and Locus of Control (LOC), as well as Nutrition Awareness and Locus of Control. Following the ANOVA, a post-hoc Scheffe's test was conducted. Descriptive statistics were calculated using the mean, standard deviation (SD), and standard error. Statistical significance was determined using a 0.05 probability value.

3. RESULTS AND DISCUSSION

3.1 Socio-Demographic Profile of Young Sportspeople in Kerala

Table 1 depicts the socio-demographic profile of young sportspeople in Kerala. Participants in the study ranged in age from 13 to 24 years. Among the study participants, 3.5% were aged 13–16, 46.81% were aged 16–20, and 44.90% were aged 20–24. There were 4.7% of respondents aged 24 to 27. In total, 59.2% of the population was male, while 40.8% was female. There were 186 males and 128 females.

Approximately .95% and 40.12% of the population attended 8-10th grades, respectively. A degree was attended by 56.4% and a postgraduate degree by 2.5%. In households, nuclear and joint families account for 34.4% and 65% of households, respectively. A further .6% comes from extended family.

According to the study, 64.6% of 314 participants lived in rural areas, 18.5% in urban areas, 16.2% in coastal regions, and 6% in tribal regions. Of the 314 participants, 8% belonged to the yellow card category (the most economically backward section of society), 51.9% belonged to the pink card category (Priority or Below Poverty Line (BPL)), 27.7% belonged to the blue card category (non-priority subsidy or Above Poverty Line (APL)), and only 12.4% fell into the white card category (Non – Priority).

3.2 Personal/Sports Profile of Young Sportspeople in Kerala

Table 2 displays the personal and sports profiles of young athletes from Kerala. The participants in the study were specialized in a variety of sports, including Cricket (10.2%), Wrestling (0.6%), Archery (1.3%), Football (39.2%), Wushu (0.6%), Handball (1.9%), Hockey (3.2%), Netball (0.6%), Kho-Kho (2.2%), Athletics (9.6%), Karate (1.9%), Decathlon (0.3%), Judo (1.9%), Kabbadi (5.4%), Badminton (4.8%), Fencing (0.6%), Tug of war (4.1%), Weightlifting (0.3%), Baseball

(6.1%), Taekwondo (0.3%), Yoga (0.6%), Volleyball (0.3%), Softball (3.2%), Kalari (0.3%), and Bodybuilding (0.3%). The research project encompassed 7% of participants with a school level of involvement, 6.4% with inter-collegiate participation, 1.3% with s-district involvement, 43% with district involvement, 1% with degree involvement, 20.7% with state-level involvement, 1.3% with revenue involvement, 0.3% with south involvement, and 18.2% with national level involvement, while 1% of participants had Khelo-India level involvement. Of the participants, 29.6% attended the nutrition class, and 70.4% did not. The study indicated that 12.1% of the 314 participants followed a particular diet, whereas 87.9% did not. Among the 314 participants, 8.59% slept 4-6 hours per day, 54.7% slept 6-8 hours per day, 33.12% slept 8-10 hours per day, and 3.50% slept more than 10 hours per day.

3.3 Locus of Control (LOC)

Table 3 shows the descriptive statistics of Locus of Control of the young sportspeople in Kerala.

Table 1. Socio-demographic profile of young sportspeople in Kerala

Age		
13-16 yrs	11	3.5%
16-20 yrs	147	46.81%
20-24 yrs	141	44.90%
24-27 yrs	15	4.7%
Gender		
Males	186	59.2%
Females	128	40.8%
Educational Qualification		
08-10 th class	3	.95%
10-12 th class	126	40.12%
Degree	177	56.4%
PG	8	2.5%
Type of family		
Joint	108	34.4%
Nuclear	204	65%
Extended	2	.6%
Area of residence		
Rural	203	64.6%
Urban	58	18.5%
Coastal	51	16.2%
Tribal	2	6%
Economic Status		
Yellow card	25	8%
Pink Card	163	51.9%
Blue Card	87	27.7%
White Card	39	12.4%

Table 2. Personal/Sports profile of young sportspersons in Kerala

Parameters	Total number	Percentage
Sports Specialization		
Cricket	32	10.2
Wrestling	2	.6
Archery	4	1.3
Football	123	39.2
Wushu	2	.6
Handball	6	1.9
Hockey	10	3.2
Netball	2	.6
Kho-Kho	7	2.2
Athletics	30	9.6
Karate	6	1.9
Decathlon	1	.3
Judo	6	1.9
Kabbadi	17	5.4
Badminton	15	4.8
Fencing	2	.6
Tug of War	13	4.1
Weightlifting	1	.3
Baseball	19	6.1
Taekwondo	1	.3
Yoga	2	.6
Volleyball	1	.3
Softball	10	3.2
Kalari	1	.3
Bodybuilding	1	.3
Level of Participation		
School	22	7
Inter-collegiate	20	6.4
s-district	4	1.3
District	135	43
Degree	3	1
State	65	20.7
Revenue	4	1.3
South	1	.3
National	57	18.2
Khelo-India	3	1
Nutrition Class		
Yes	93	29.6
No	221	70.4
Special Diet		
Yes	38	12.1
No	274	87.9
Sleep		
4-6 hrs	27	8.59
6-8 hrs	172	54.7
8-10 hrs	104	33.12
10-12 hrs	11	3.50

Table 4 demonstrates that 0.6% of the athletes had a very strong external LOC, 7.6% had an external LOC, 56.7% had both internal and external LOCs, and 35% had an internal LOC.

3.4 Anova: Eating Practices and Locus of Control (LOC) and Nutrition Awareness and Locus of Control (LOC)

Table 5 depicts the Descriptive Statistics of Eating Practices, Locus of Control and Nutrition Awareness.

The one-way ANOVA revealed a statistically significant difference between the groups (FCP) (p-value = 0.018, F-value = 3.385). The one-way ANOVA revealed a statistically significant difference between groups (FFM) (F(3,310) = 5.124, p = .002). The one-way ANOVA (NA) results showed a statistically significant difference between the groups (F (3,310) = 4.620, p = .004).

Based on the findings so far, this can be concluded that there are statistically significant differences between the groups. The table Multiple Comparisons displays how the groups

differed from one another. The Scheffe post hoc test is regarded as the best approach for conducting post hoc tests on a one-way ANOVA, however there more possibilities. The table shows that there is a statistically significant difference between the groups of FCP, External LOC, and Internal LOC (p = 0.037), (FFM) between both I and E and Internal LOC (p = 0.009), and NA between External LOC and Internal LOC (p=.046).

3.5 Nutrition Awareness

Table 8 shows the Descriptive Statistics of Nutrition Awareness (NA) of the young sportspersons in Kerala. Nutrition awareness of the players were 4±1.593.

The average score in this table was 4±1.593. Those who scored below 4 (Below Average) were around 33.75%. Participants with scores of 4-6 (Average) were 48.72%, 6-8 (Good) were 16.24%, and 8-10 (Excellent) were 1.27%.

Table 3. Descriptive statistics: Locus of Control (LOC) of the young sportspersons in Kerala

LOC	
N	314
Std. Error of Mean	.035
Median	3.00
Std. Deviation	.621

Table 4. Locus of Control of the Young Sportspersons in Kerala

LOC	Frequency	Percent
VS External LOC	2	.6
External LOC	24	7.6
Both I and E	178	56.7
Internal LOC	110	35.0
Total	314	100.0

Table 5. Descriptive statistics of eating practices, locus of control and nutrition awareness

		N	Mean	Standard Deviation
FCP	VS External LOC	2	17.50	6.364
	External LOC	24	17.38	5.106
	Both I and E	178	15.49	4.586
	Internal LOC	110	14.44	4.056
	Total	314	15.28	4.507
FFM	VS External LOC	2	49.50	9.192
	External LOC	24	53.46	8.267
	Both I and E	178	54.79	8.666
	Internal LOC	110	58.05	6.226
	Total	314	55.80	8.019

		N	Mean	Standard
NA	VS External LOC	2	1.50	2.121
	External LOC	24	3.33	1.308
	Both I and E	178	4.17	1.572
	Internal LOC	110	4.34	1.599
	Total	314	4.15	1.593

Table 6. ANOVA: Eating Practices and Locus of Control (LOC) and Nutrition Awareness and Locus of Control (LOC)

ANOVA		Sum of Squares	DF	Mean Square	F	SIG.
FCP	Between Groups	201.664	3	67.221	3.385	.018
	Within Groups	6155.674	310	19.857		
FFM	Between Groups	950.920	3	316.973	5.124	.002
	Within Groups	19175.440	310	61.856		
NA	Between Groups	33.976	3	11.325	4.620	.004
	Within Groups	759.989	310	2.452		

Table 7. Post Hoc scheffe's test

Multiple Comparisons							
Scheffe's test							
Dependent Variable	(I) LOC	(J) LOC	Mean Difference (I-J)	STD. Error	SIG.	95% Confidence Interval	
						Lower Bound	Upper Bound
FCP	VS External LOC	External LOC	.125	3.280	1.000	-9.09	9.34
		Both I and E	2.006	3.169	.940	-6.90	10.91
		Internal LOC	3.064	3.179	.819	-5.87	12.00
	External LOC	VS External LOC	-.125	3.280	1.000	-9.34	9.09
		Both I and E	1.881	.969	.290	-.84	4.60
		Internal LOC	2.939*	1.004	.037	.12	5.76
	Both I and E	VS External LOC	-2.006	3.169	.940	-10.91	6.90
		External LOC	-1.881	.969	.290	-4.60	.84
		Internal LOC	1.058	.540	.282	-.46	2.58
	Internal LOC	VS External LOC	-3.064	3.179	.819	-12.00	5.87
		External LOC	-2.939*	1.004	.037	-5.76	-.12
		Both I and E	-1.058	.540	.282	-2.58	.46
FFM	VS External LOC	External LOC	-3.958	5.788	.926	-20.23	12.31
		Both I and E	-5.292	5.592	.826	-21.01	10.43
		Internal LOC	-8.555	5.612	.509	-24.33	7.22
	External LOC	VS External LOC	3.958	5.788	.926	-12.31	20.23
		Both I and E	-1.334	1.710	.894	-6.14	3.47
		Internal LOC	-4.596	1.772	.083	-9.58	.38
	Both I and E	VS External LOC	5.292	5.592	.826	-10.43	21.01

Multiple Comparisons							
Scheffe's test							
Dependent Variable	(I) LOC	(J) LOC	Mean Difference (I-J)	STD. Error	SIG.	95% Confidence Interval	
						Lower Bound	Upper Bound
NA	Internal LOC	External LOC	1.334	1.710	.894	-3.47	6.14
		Internal LOC	-3.262*	.954	.009	-5.94	-.58
		VS External LOC	8.555	5.612	.509	-7.22	24.33
		External LOC	4.596	1.772	.083	-.38	9.58
	VS External LOC	Both I and E	3.262*	.954	.009	.58	5.94
		External LOC	-1.833	1.152	.471	-5.07	1.41
		Both I and E	-2.674	1.113	.126	-5.80	.46
	External LOC	Internal LOC	-2.836	1.117	.094	-5.98	.30
		VS External LOC	1.833	1.152	.471	-1.41	5.07
		Both I and E	-.841	.340	.109	-1.80	.12
	Both I and E	Internal LOC	-1.003*	.353	.046	-1.99	-.01
		VS External LOC	2.674	1.113	.126	-.46	5.80
		External LOC	.841	.340	.109	-.12	1.80
	Internal LOC	Internal LOC	-.162	.190	.866	-.70	.37
		VS External LOC	2.836	1.117	.094	-.30	5.98
		External LOC	1.003*	.353	.046	.01	1.99
		Both I and E	.162	.190	.866	-.37	.70

*. The mean difference is significant at the 0.05 level.

Table 8. Descriptive statistics: Nutrition Awareness (NA) of the young sportspersons in Kerala

Nutrition Awareness – Descriptive Statistics	
N	314
Mean	4
Std. Deviation	1.593
Minimum	0
Maximum	8

Table 9. Nutrition Awareness (NA) of the young sportspersons in Kerala

Nutrition Awareness	Frequency	Percent
<4 – Below Average	106	33.75
4-6 - Average	153	48.72
6-8 - Good	51	16.24
8-10 - Excellent	4	1.27

4. SUMMARY AND CONCLUSIONS

A one-way ANOVA found a statistically significant difference in eating patterns (food consumption pattern and food frequency method)

and nutrition awareness between at least two groups $F(3,310)=[3.385]$, $p=.018$, $F(3,310) = [5.124]$, $p=.002$, and $F(3,310)=[4.620]$, $p=.004$ respectively. This demonstrates that locus of control influences young sportspeople's eating

habits and has a significant impact on nutrition awareness. Post Hoc analysis revealed that there is a statistically significant difference between the groups of FCP, External LOC, and Internal LOC ($p = 0.037$), (FFM) between both I and E and Internal LOC ($p = 0.009$), and NA between External LOC and Internal LOC ($p = 0.046$). The Locus of Control, .6% (2) of the sportspersons had very strong external LOC, 7.6% (24) had external LOC, the majority of the sportspersons 56.7% (178) had both internal and external LOC and 35% (110) were having internal LOC. The mean score for nutrition awareness was 4.15 ± 1.593 , with 16.24% ($n=51$) scoring in the good category.

To summarise, the concept of locus of control applies to sportspersons' nutrition practices in India, as it is in other parts of the world. In India, sportspersons' nutrition practices may be influenced by various factors, including cultural norms, socioeconomic status, access to resources, and individual beliefs about health and wellness.

Research has found that Indian sportspersons with an internal locus of control had better nutrition practices than those with an external locus of control. Sportspersons with an internal locus of control are likely to take more personal responsibility for their nutrition, make more informed choices about their food, and have a higher level of self-efficacy when it comes to making healthy nutrition choices. On the other side, athletes with an external locus of control may be more prone to make nutrition decisions based on external cues, such as coaches or teammates. The locus of control can influence the nutrition awareness and behaviours of sportspersons. Athletes with an internal locus of control are generally more proactive, personally invested in their nutritional choices, and likely to have a higher level of awareness regarding the impact of nutrition on their performance. Understanding the individual locus of control can help tailor nutrition education and support for athletes to optimize their dietary practices.

However, it is crucial to emphasise that the relationship between locus of control and dietary habits is complex and may be influenced by a

variety of other factors, including cultural and societal norms surrounding food and eating, resource availability, and individual views about health and wellbeing.

It was concluded that the results of this study could help retain athletes and maximize their performance. Furthermore, research on this area is sparse, and further research is needed to better understand the relationship between locus of control on eating habits and nutrition awareness among athletes in India.

CONSENT

Every subject provided written informed consent before participating in the study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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