International Journal of Enhanced Research in Medicines & Dental Care (IJERMDC),
ISSN: 2349-1590, Vol. 12 Issue 8, August 2025, Impact Factor: 8.325

Comparing Parental Awareness Before and After Educational Intervention on Physical Health and Activity Levels of Children in Nadia District

Rita Rakshit[1], Sumit Padihar[2]

[1]PhD scholar, Department of Nursing Science, Mansarovar Global University, Sehore, Madhya Pradesh, India.
[2]Professor, Department of Nursing Science, Mansarovar Global University, Sehore, Madhya Pradesh, India.

ABSTRACT

The study aims to assess the impact of an information booklet on enhancing parents' awareness regarding the physical health and activity levels of their school-going children in a selected community of Nadia District, West Bengal. A pretest-posttest quasi-experimental design was employed, with 300 parents participating. The intervention involved distributing a comprehensive information booklet to educate parents about the importance of physical health, benefits of activity, and practical ways to integrate physical activity into their children's daily routines. Data were collected using pretest and post-test questionnaires, interviews, and knowledge assessments. Statistical analyses, including Chi-Square and Z-tests, revealed significant improvements in parents' cognizance, with increased correct responses and reduced misconceptions. The intervention booklet was found to be an effective tool in fostering parental involvement and promoting healthier physical activity habits for children. These findings highlight the importance of involving parents in educational interventions to support the well-being of children.

Keywords: Physical health, Physical activity, Children, Parental awareness, Educational intervention, School-going children, Quasi-experimental design, Nadia District.

INTRODUCTION

A healthy lifestyle is made up of enduring personal behaviors that are developed during the socialization process. Long-lasting personal habits formed during the socialization process comprise a healthy lifestyle (Park K, et al., 2017). Living a healthy lifestyle makes you a more positive role model for other members of the community, particularly students. WHO (2018) Physical activity reduces the risk of fatal diseases by influencing lipid profiles, blood pressure, steroid hormones, body weight, and insulin resistance. The health benefits of physical activity are well documented. Children's bone health, anthropometric measurements (particularly body composition, waist circumference, and fat mass), and cardiovascular risk factors are all favorably connected with physical activity (Ekelund U, et al., 2012).

In addition to being beneficial for young people's emotional well-being and self-esteem, regular physical activity has been connected to improved cognitive function and academic achievement (Brown HE, et al., 2013). Despite these acknowledged advantages, data from many countries indicate that most kids are not physically active enough to have a positive impact on their health and that physical activity levels sharply decline as kids grow older and enter adolescence (Dumith SC, et al., 2011). Recent research suggests that if family members are not participating, it is unlikely that children's levels of physical activity may be altered over time (Kipping RR, et al., 2014). Support from parents, whether in the form of encouragement, co-participation, or transportation, has been positively and consistently associated with juvenile physical activity, particularly in youngsters.

Additionally, it has been shown that school-based interventions are successful when they include a home component, such as parent education. Despite its promise, little is known about the best approaches to engage families in the promotion of physical exercise (Barr-Anderson DJ, et al., 2013). Numerous health benefits of physical activity (PA) have been demonstrated, such as improved cardiovascular, metabolic, and bone health, a lower risk of being overweight or obese, and a healthier body composition (Gunter KB, et al., 2012). S. Kriemler and associates (2011) There are numerous psychosocial benefits in addition to the biological ones, including improvements in confidence and self-esteem as well as a reduction in the symptoms of stress, anxiety, and depression.

Children's physical health and level of activity have a big impact on their overall development. Regular physical activity is essential for maintaining healthy growth, enhancing motor abilities, bolstering cognitive functioning, and preventing a variety of health issues, including diabetes, obesity, and cardiovascular diseases. According to the World Health Organization (WHO), a major cause of non-communicable diseases and a major worldwide risk factor for death is physical inactivity (WHO, 2020). Parents have a significant impact on their children's physical exercise habits since their attitudes and actions shape their lifestyle choices from a young age.

To maintain excellent health, school-age children (6–12 years old) need to engage in moderate–to-intense physical activity for at least 60 minutes each day. However, studies show that many children, especially in urban areas, may not meet this goal due to lifestyle changes, more screen usage, and decreased opportunities for outdoor play. The rising prevalence of pediatric obesity in India, particularly in urban and rural regions, is extremely worrisome (Gupta et al., 2017). The problem is made worse by parents' ignorance about the advantages of physical activity and how to incorporate it into their kids' daily routines.

Parents are the main caretakers and role models for children's health and activity levels. Parents' cognizance, defined as their understanding, knowledge, and attitudes toward physical health and exercise, has a direct impact on how they support and encourage their children to lead active lives (Davison & Birch, 2001). Due to misunderstanding, misinformation, and cultural barriers, children often do not get enough physical activity, especially in places with limited resources for health education (Hesketh et al., 2010).

MATERIAL AND METHODS

In order to evaluate the effect of an educational intervention—in the form of an information booklet—on parents' awareness of the physical health and activity levels of their school-age children in a chosen community in Nadia District, West Bengal, the current study used a pretest–posttest quasi-experimental research design. This approach was used to increase the internal validity of the results by making it easier to quantify changes in knowledge, attitudes, and practices within the same group of participants before and after the intervention (Creswell & Creswell, 2018; Polit & Beck, 2021). In order to assess 300 parents' current knowledge and behaviors about their kids' physical health and activity levels, a systematic and validated questionnaire was given to them at the baseline stage.

A thorough information booklet created especially for parents served as the intervention's main component. Its goals were to increase parents' awareness, encourage healthy habits, and provide them the tools they needed to keep an eye on and enhance their kids' physical activity levels. In order to engage parents in active learning, the booklet was divided into three sections: (i) an introduction and objectives that emphasized the importance of physical health and practical strategies for raising awareness; (ii) content that covered the fundamentals of physical health, the advantages of physical activity, the recommended daily activity levels, and guidelines for integrating and monitoring activity through tools and routine check-ups; and (iii) interactive activities like worksheets, exercises. The purpose of the intervention was to provide both theoretical knowledge and practical tools to parents, enabling them to foster healthier lifestyles for their children.

Three tools were used to collect data: (i) a parental profile questionnaire to gather demographic information about the participants; (ii) a knowledge assessment tool that was given as a pre- and post-test to gauge awareness changes; and (iii) structured interviews that were conducted both before and after the intervention to evaluate parental physical activity practices. Convenient sampling was used to choose 300 participants for the study, and ethical compliance was ensured by obtaining informed consent from each respondent before data collection (Polit & Beck, 2021).

Both descriptive and inferential statistical techniques were used in the data analysis process. The distribution of responses and participant data were compiled using descriptive statistics, such as frequencies and percentages. Inferential statistics included the correlation coefficient to determine the relationship between parental awareness and children's levels of physical activity, the Z-test to measure improvements in correct responses following the intervention, and the Chi-square test to investigate the relationship between the intervention and parental cognizance. In quasi-experimental investigations, these statistical techniques are frequently used to determine the efficacy of interventions and investigate correlations between variables (Field, 2018; Kumar, 2019).

RESULTS

The survey, conducted among 300 parents, highlight a significant improvement in parents' cognizance regarding physical health and activity levels of their school-going children following the intervention booklet. The analysis of pretest and posttest responses for 25 questions demonstrated a marked increase in correct responses**.**

Table 1- Results for Responses of Pre-Test and Post Test Questionnaire

Question No.	Pretest Right Responses	Pretest Wrong Responses	Post-Test Right Responses	Post-Test Wrong Responses
1	71	229	216	84
2	66	234	240	60
3	77	223	220	80
4	76	224	250	50
5	68	232	238	62
6	75	225	289	11
7	69	231	287	13
8	74	226	255	45
9	78	222	252	48
10	55	245	237	63
11	78	222	218	82
12	81	219	211	89
13	67	233	240	60
14	66	234	242	58
15	71	229	290	10
16	83	217	229	71
17	61	239	243	57
18	63	237	275	25
19	75	225	230	70
20	76	224	254	46
21	64	236	248	52
22	71	229	266	34
23	87	213	285	15
24	66	234	203	97
25	68	232	214	86

The comparison between pretest and post-test results highlights the intervention's effectiveness in improving participant knowledge, with correct responses increasing significantly (from 55–87 to 203–290) and incorrect responses decreasing notably (from 213–245 to 10–97). While questions like 6 and 15 showed exceptional improvement, others, such as 24, 16, and 21, indicated areas requiring further reinforcement. Overall, the intervention successfully addressed knowledge gaps, though some topics may benefit from enhanced teaching strategies for comprehensive understanding.

1. Impact of the Intervention Booklet on Parents' Cognizance: Chi-Square Analysis

Table 2- Chi-Square Test Results for all the questions

Question No.	Chi-Square ($\chi 2$)	Degrees of Freedom (df)	p-value
1	140.42	1	4.32×10^{-32}
2	201.92	1	3.55×10^{-45}
3	136.34	1	6.65×10^{-31}
4	203.37	1	1.22×10^{-45}
5	192.74	1	1.23×10^{-43}
6	320.06	1	3.97×10^{-71}
7	328.56	1	1.11×10^{-72}
8	220.70	1	7.98×10^{-50}
9	203.78	1	1.03×10^{-45}
10	220.82	1	7.79×10^{-50}
11	130.70	1	5.23×10^{-30}
12	112.72	1	6.58×10^{-26}
13	199.64	1	6.35×10^{-45}
14	206.64	1	3.53×10^{-46}
15	333.02	1	7.91×10^{-73}
16	142.34	1	3.62×10^{-32}
17	220.74	1	7.94×10^{-50}
18	304.34	1	2.94×10^{-68}
19	160.24	1	5.14×10^{-36}
20	213.36	1	1.06×10^{-48}
21	225.96	1	4.73×10^{-51}
22	257.36	1	1.01×10^{-57}
23	277.54	1	2.05×10^{-61}
24	126.44	1	1.41×10^{-29}
25	142.58	1	3.44×10^{-32}

The Chi-Square test results confirm that the intervention booklet significantly improved parents' cognizance regarding physical health and activity levels of their children, as evidenced by highly significant Chi-Square values (112.72–333.02) and extremely small p-values (<0.0001) across all 25 questions. These findings demonstrate that the booklet effectively increased awareness, with observed improvements unlikely due to chance, highlighting its potential to enhance parental involvement in fostering healthier lifestyles for children in the community.

2. The Z-Test Analysis

Table 3 - z-Scores for right and wrong Responses of all questions:

Question No.	Pretest Right Responses (X1)	Post-test Right Responses (X2)	Pretest Proportion (p1 - Right)	Post-test Proportion (p2 - Right)	z-Score (Right)	Pretest Wrong Responses (X1)	Post-test Wrong Responses (X2)	Pretest Proportion (p1 - Wrong)	Post-test Proportion (p2 - Wrong)	z-Score (Wrong)
1	71	216	0.2367	0.7200	37.47	229	84	0.7633	0.2800	37.47
2	66	240	0.2200	0.8000	41.90	234	60	0.7800	0.2000	41.90
3	77	220	0.2567	0.7333	36.75	223	80	0.7433	0.2667	36.75
4	76	250	0.2533	0.8333	46.14	224	50	0.7467	0.1667	46.14
5	68	238	0.2267	0.7933	42.72	232	62	0.7733	0.2067	42.72
6	75	289	0.2500	0.9633	63.22	225	11	0.7500	0.0367	63.22
7	69	287	0.2300	0.9567	66.15	231	13	0.7700	0.0433	66.15
8	74	255	0.2467	0.8500	49.03	226	45	0.7533	0.1500	49.03
9	78	252	0.2600	0.8400	45.08	222	48	0.7400	0.1600	45.08
10	55	237	0.1833	0.7900	55.33	245	63	0.8167	0.2100	55.33
11	78	218	0.2600	0.7267	35.48	222	82	0.7400	0.2733	35.48
12	81	211	0.2700	0.7033	31.68	219	89	0.7300	0.2967	31.68
13	67	240	0.2233	0.8000	42.23	233	60	0.7767	0.2000	42.23
14	66	242	0.2200	0.8067	43.37	234	58	0.7800	0.1933	43.37
15	71	290	0.2367	0.9667	65.58	229	10	0.7633	0.0333	65.58
16	83	229	0.2767	0.7633	34.89	217	71	0.7233	0.2367	34.89
17	61	243	0.2033	0.8100	51.74	239	57	0.7967	0.1900	51.74
18	63	275	0.2100	0.9167	64.67	237	25	0.7900	0.0833	64.67
19	75	230	0.2500	0.7667	39.14	225	70	0.7500	0.2333	39.14
20	76	254	0.2533	0.8467	48.24	224	46	0.7467	0.1533	48.24
21	64	248	0.2133	0.8267	53.46	236	52	0.7867	0.1733	53.46
22	71	266	0.2367	0.8867	57.66	229	34	0.7633	0.1133	57.66
23	87	285	0.2900	0.9500	61.05	213	15	0.7100	0.0500	61.05
24	66	203	0.2200	0.6767	31.34	234	97	0.7800	0.3233	31.34
25	68	214	0.2267	0.7133	34.48	232	86	0.7733	0.2867	34.48

The z-test results unequivocally demonstrate that the intervention booklet significantly improved parents' awareness of their school-going children's physical health and activity levels in Nadia District, West Bengal. The z-scores for all 25 questions were exceptionally high (31.34 to 66.15), indicating substantial gains in correct responses and reductions in misconceptions from pretest to post-test. For instance, in Question 1, the proportion of correct responses rose dramatically from 0.2367 to 0.7200 (z-score: 37.47), with a corresponding sharp decline in wrong responses. This trend was consistent across all questions, with particularly notable improvements in Questions 2, 6, and 7. These findings underscore the effectiveness of the booklet in enhancing cognizance and highlight the value of educational interventions in promoting healthier attitudes toward children's physical well-being in the community.

2. THE CORRELATION COEFFICIENT ANALYSIS

Table 4- Correlation Coefficient for Right and Wrong Responses

Question No.	Right Pretest Responses (X1)	Right Post-test Responses (X2)	Right Correlation Coefficient	Wrong Pretest Responses (X1)	Wrong Post-test Responses (X2)	Wrong Correlation Coefficient
1	71	216	0.96	229	84	0.96
2	66	240	0.94	234	60	0.94
3	77	220	0.94	223	80	0.94
4	76	250	0.93	224	50	0.93
5	68	238	0.95	232	62	0.95
6	75	289	0.99	225	11	0.99
7	69	287	0.99	231	13	0.99
8	74	255	0.96	226	45	0.96
9	78	252	0.97	222	48	0.97
10	55	237	0.95	245	63	0.95
11	78	218	0.92	222	82	0.92
12	81	211	0.91	219	89	0.91
13	67	240	0.95	233	60	0.95
14	66	242	0.96	234	58	0.96
15	71	290	0.99	229	10	0.99
16	83	229	0.94	217	71	0.94
17	61	243	0.98	239	57	0.98
18	63	275	0.98	237	25	0.98
19	75	230	0.96	225	70	0.96
20	76	254	0.97	224	46	0.97
21	64	248	0.95	236	52	0.95
22	71	266	0.98	229	34	0.98
23	87	285	0.99	213	15	0.99
24	66	203	0.91	234	97	0.91
25	68	214	0.93	232	86	0.93

The calculation of correlation coefficients for both right and wrong responses in the pretest and post-test showed consistently high values, ranging from 0.91 to 0.99, indicating a strong positive relationship. This suggests that the intervention booklet had a significant impact on improving parents' cognizance regarding the physical health and activity levels of their school-going children in Nadia District, West Bengal. The high correlation for both correct and incorrect responses reflects a notable improvement in parents' understanding, supporting the hypothesis that the booklet effectively raised awareness and knowledge about children's health, confirming the success of the intervention.

DISCUSSION

The survey results, along with the Chi-Square, z-test, and correlation coefficient analyses, strongly demonstrate the effectiveness of the intervention booklet in improving parents' cognizance of their school-going children's physical health and activity levels in Nadia District, West Bengal. The comparison of pretest and post-test responses showed a significant increase in correct responses and a decrease in incorrect responses across all 25 questions, supported by Chi-Square values ranging from 112.72 to 333.02 and p-values below 0.0001. Z-scores ranging from 31.34 to 66.15 further confirmed substantial improvements in awareness, particularly in Questions 6, 15, and 7. The high correlation coefficients (0.91 to 0.99) indicated a consistent positive relationship between right and wrong responses, reinforcing the booklet's success in enhancing parents' understanding. However, questions like 16, 24, and 21 showed less significant improvement, suggesting that certain topics may require further focus or more comprehensive teaching strategies.

CONCLUSION

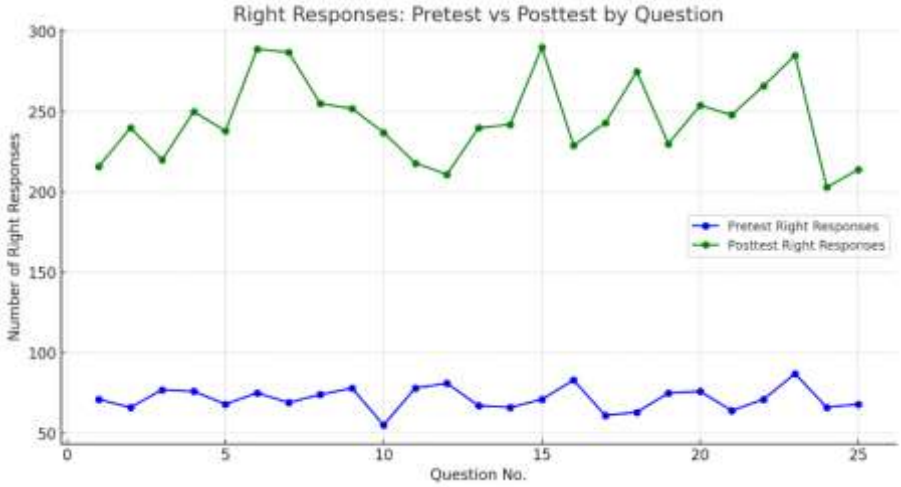

Figure1-Graph represent the comparison between pretest and posttest results

The intervention booklet demonstrated significant effectiveness in improving parents' cognizance of the physical health and activity levels of their school-going children in Nadia District. The high correlation coefficients, Chi-Square test results, and z-scores all point to a substantial increase in awareness and knowledge post-intervention. These results strongly suggest that educational interventions, such as the booklet used in this study, can play a crucial role in enhancing parental involvement and promoting healthier lifestyles for children. Despite some areas requiring additional reinforcement, the overall success of the intervention supports the notion that well-designed educational materials can be an impactful tool in fostering improved health behaviors within communities. The study's findings highlight the potential of such interventions to significantly contribute to the overall well-being of children by educating parents on critical health matters.

REFERENCES

[1]. Barr-Anderson, D. J., Adams-Wynn, A. W., DiSantis, K. I., & Kumanyika, S. K. (2013). Family-focused physical activity, diet and obesity interventions in African–American girls: A systematic review. Obesity Reviews, 14(1), 29–51. https://doi.org/10.1111/j.1467-789X.2012.01042.x

[2]. Brown, H. E., Pearson, N., Braithwaite, R. E., Brown, W. J., & Biddle, S. J. H. (2013). Physical activity interventions and depression in children and adolescents: A systematic review and meta-analysis. Sports Medicine, 43(3), 195–206. https://doi.org/10.1007/s40279-012-0015-8

[3]. Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). Sage Publications.

[4]. Davison, K. K., & Birch, L. L. (2001). Childhood overweight: A contextual model and recommendations for future research. Obesity Reviews, 2(3), 159–171. https://doi.org/10.1046/j.1467-789x.2001.00036.x

[5]. Dumith, S. C., Gigante, D. P., Domingues, M. R., & Kohl, H. W. (2011). Physical activity change during adolescence: A systematic review and a pooled analysis. International Journal of Epidemiology, 40(3), 685–698. https://doi.org/10.1093/ije/dyq272

[6]. Ekelund, U., Luan, J., Sherar, L. B., Esliger, D. W., Griew, P., Cooper, A., & the International Children's Accelerometry Database (ICAD) Collaborators. (2012). Moderate to vigorous physical activity and sedentary time and cardiometabolic risk factors in children and adolescents. JAMA, 307(7), 704–712. https://doi.org/10.1001/jama.2012.156

[7]. Field, A. (2018). Discovering statistics using IBM SPSS statistics (5th ed.). Sage Publications.

[8]. Gunter, K. B., Almstedt, H. C., & Janz, K. F. (2012). Physical activity in childhood may be the key to optimizing lifespan skeletal health. Exercise and Sport Sciences Reviews, 40(1), 13–21. https://doi.org/10.1097/JES.0b013e318236e5ee

[9]. Gupta, N., Goel, K., Shah, P., & Misra, A. (2017). Childhood obesity in developing countries: Epidemiology, determinants, and prevention. Endocrine Reviews, 33(1), 48–70. https://doi.org/10.1210/er.2010-0028

[10]. Hesketh, K. R., Lakshman, R., & van Sluijs, E. M. (2010). Barriers to children's physical activity: A qualitative study in primary school-aged children. Journal of Paediatrics and Child Health, 46(10), 294–298. https://doi.org/10.1111/j.1440-1754.2010.01771.x

[11]. Kipping, R. R., Howe, L. D., Jago, R., Campbell, R., Wells, S., Chittleborough, C., ... & Lawlor, D. A. (2014). Effect of intervention aimed at increasing physical activity, reducing sedentary behaviour, and increasing fruit and vegetable consumption in children: Active for Life Year 5 (AFLY5) school-based cluster randomised controlled trial. BMJ, 348, g3256. https://doi.org/10.1136/bmj.g3256

[12]. Kriemler, S., Meyer, U., Martin, E., van Sluijs, E. M. F., Andersen, L. B., & Martin, B. W. (2011). Effect of school-based interventions on physical activity and fitness in children and adolescents: A review of reviews and systematic update. British Journal of Sports Medicine, 45(11), 923–930. https://doi.org/10.1136/bjsports-2011-090186
[13]. Kumar, R. (2019). Research methodology: A step-by-step guide for beginners (5th ed.). Sage Publications.
[14]. Park, K. (2017). Park's textbook of preventive and social medicine (24th ed., p. 139). Jabalpur, Madhya Pradesh, India: M/s Banarsidas Bhanot.
[15]. Polit, D. F., & Beck, C. T. (2021). Nursing research: Generating and assessing evidence for nursing practice (11th ed.). Wolters Kluwer.
[16]. World Health Organization. (2020). Physical activity. Retrieved from https://www.who.int/news-room/fact-sheets/detail/physical-activity
[17]. World Health Organization. (n.d.). What is healthy lifestyle. Retrieved August 10, 2018, from http://www.Eru/icp/lvng