



Factors Associated with Psychosocial Stimulation Development of Preschool Children in Rupandehi District of Nepal

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Abstract

Creating fun learning games, telling stories, and sharing warmth in social interactions are important for helping kids grow well; it is like planting seeds for a bright future workforce for the nation. This study aimed to assess factors associated with psychosocial stimulation development in 401 preschool children (3-5 years) in the Rupandehi district of Nepal. A cross-sectional survey was conducted using a multistage random sampling technique. Socioeconomic and demographic data, as well as psychosocial stimulation levels, were collected through validated instruments, interviews, and direct observation. IBM SPSS version 26 was used for data analysis, with a significance level of $p < 0.05$. Among the participants, 50.4% were economically marginalized, and only 1.2% caregivers offered high levels of psychosocial stimulation to their preschoolers. Positive associations were found between the number of children, family type, caste/ethnicity, parental education, and wealth status in the unadjusted analysis. In multivariate analysis, the psychosocial stimulation received by preschool children was positively associated with wealth status, caste, mother's education, family structure and father's education. Wealth status, caste, family structure, and parental education emerged as key factors influencing the psychosocial stimulation development of preschool children. Implementing strategies to promote psychosocial stimulation within families from economically marginalized backgrounds, disadvantaged castes (including Dalit, non-Dalit Tarai caste, and Janajati groups), with illiterate parents, and those living in nuclear family structures could potentially make a substantial contribution towards enhancing psychosocial stimulation among preschool children.

Keywords: Associated factors, primary caregivers, psychosocial development

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Introduction

Effective care at early childhood serves as the foundation for social, emotional and cognitive development, profoundly impact the children's well-being and pave the way for future education and prosperity (Britto et al., 2017; Sharma, 2023; Sharma & Budhathoki, 2023). Investing in the early stages of childhood represents an economically efficient and crucial approach to fostering sustainable social and economic progress on a global scale (Urke et al., 2018). Caregivers' psychosocial stimulation, encompassing affection, motivation, storytelling, and academic engagement, significantly influences children's language abilities, emotional health, and overall personality growth (Nahar et al., 2012; Widick et al., 1978). Additionally, the quality of parental care during a child's formative years, characterized by a nurturing, attentive, and stimulating environment, significantly influences the comprehensive development of young children (Knauer et al., 2019; Pudasaini et al., 2023). Likewise, providing support to parents, caregivers, and families in delivering nurturing care and ensuring protection is vital for empowering young children to fully achieve their developmental capabilities (Britto et al., 2017; Finch et al., 2016).

Erikson's theory posits that human personality unfolds in a predetermined sequence, encompassing eight stages of psychosocial development spanning from infancy to adulthood (Kesavelu et al., 2021). During the preschool stage, characterized by initiative versus guilt, children begin to exhibit characteristics related to asserting control over their environment through interactions with caregivers, family members, peers, and play activities (Batra, 2013). During this stage, children eagerly seek regular interaction with their peers and caregivers, with play being their primary avenue for nurturing their interpersonal abilities through taking initiative (Urke et al., 2018). This stage is characterized by a potential flow of energy and action, although family members or parents may sometimes perceive it as disruptive (Nahar et al., 2012). During this stage, children exhibit a strong inclination to question and seek knowledge as a natural part of their intellectual growth, and if parents or primary caregivers respond to their inquiries by threatening or diverting them rather than addressing their curiosity, it can lead to the development of feelings of guilt (Kesavelu et al., 2021). Initiative, cultivated when parents enable children to explore within set boundaries and endorse their choices, nurtures self-confidence and purpose, whereas difficulties arising from the suppression of initiatives by parents or caregivers can result in feelings of inadequacy (Maree, 2021). When preschool-aged children are provided opportunities to independently plan and initiate activities such as games and interactions with others, they develop a sense of security, which in turn reinforces their leadership and decision-making abilities without fear or hesitation

(Batra, 2013) Conversely, a sense of guilt can develop if their initiatory actions are stifled through control, criticism, or punishment aimed at restricting their creative expression (McLeod, 2018).

Providing mentally and physically engaging activities and experiences during a child's early years creates optimal opportunities for learning, knowledge acquisition, and exploration (Soheilipour et al., 2019). Numerous studies conducted on humans have demonstrated that early and appropriate psychosocial stimulation can result in significant enhancements in the development of both physical and mental processes (Jeong et al., 2016; Nahar et al., 2012; Scaglioni et al., 2018; Sharma, 2023). Likewise, crucial elements that influence the physical development and cognitive advancement of preschool children encompass their family, residential environment, economic circumstances, psychosocial stimulation, socio-cultural factors, actual deprivation, community surroundings, and peer associations (Almeida et al., 2021; Duggan & Dennis, 2014; Khalid, 2015; Thomas et al., 2017). Inadequate psychosocial stimulation can result in developmental delays, impacting a child's capacity to excel at school as well as their future employment prospects and earning potential (Baitun Nahar et al., 2012; Engle et al., 2011). Effective psychosocial stimulation is recognized as a key factor in enhancing the quality of life for preschool children (Riyadi et al., 2019; United Nations Children's Fund [UNICEF], 2018). The earlier children are introduced to psychosocial influences, the more positive their developmental outcomes tend to be (Warsito et al., 2012). The preschool years provide an optimal opportunity to establish a stimulating environment that promotes comprehensive development and helps alleviate the impacts of missed opportunities (Soheilipour et al., 2019).

Existing Nepali literature lacks adequate discussion on the importance of proper parenting and development of psychosocial stimulation (Sharma, 2023; Sharma et al., 2023) for the all-round development of preschool children, which is crucial for their school readiness. Therefore, this study focuses on the investigation of "factors associated with psychosocial stimulation development of preschool children" in the context of Rupandehi district of Western Nepal. The insights provided by the study could greatly assist parents in establishing an encouraging home environment.

Methods and Procedures

Study Design and Setting

This research employed cross-sectional descriptive survey design and involved primary caregivers of preschool children as participants. Data collection occurred between February 4th and April 12th, 2021, in Rupandehi district of

Nepal. According to the latest census conducted in 2021, the district's population is 1,118,975, characterized by diversity in terms of ethnicity, culture, and socio-economic backgrounds. In the academic year 2020, there were 14,358 children enrolled in government-owned Early Childhood Development [ECD] centers, as reported by the education division of the local government unit (Sharma et al., 2022; Sharma, 2022).

Sampling and Sample Size

The sample size for this study was determined using Cochran's formula (Cochran, 1977), which calculates the required sample size based on a specified confidence level and precision. Since the prevalence of the attribute in the population was unknown, the researcher assumed maximum variability and set the prevalence as 50%. With a desired precision of 5% and a confidence level of 95%, the unadjusted sample size (n_0) was calculated to be 384.16.

Here,

n_0 = unadjusted sample size,

Proportion of attributes in the population (p) = 50% = 0.5

Hence

$$q = 1 - p = 1 - 0.5 = 0.5$$

$$z = \text{confidence level at 95\%} = 1.96$$

$$\text{Precision (e)} = 5\% = 0.05$$

$$\text{Therefore, } n = \frac{z^2 pq}{e^2}$$

$$\text{or, } n = 1.96^2 * 0.5 * \frac{0.5}{0.05^2} = 384.16$$

Again, the population for this study was known and finite (14358). Therefore, finite population correction formula (Israel, 2013) was used to calculate the adjusted sample size as follows:

$$n = \frac{n_0}{1 + n_0/N}$$

$$n = \frac{384.16}{1 + 384.16/14358}$$

$$n = 374.17$$

Therefore, 375 were used as the adjusted sample size. Considering a 7% non-response rate based on previous in-person interviews that found a 7% increase in

non-response when assessing psychosocial stimulation development (Gooch et al., 2019), the final sample size was increased to 401.

The sample selection involved multiple stages. In stage one, three local units were chosen randomly from three distinct strata, representing a sub-metropolitan city, a municipality, and a rural municipality. In stage two, records of total schools/ECD centers were collected from each selected local government unit. In stage three, a simple random sampling (Lottery method) was employed to select each of the five ECD centers of the local government unit. In the last stage, the population proportionate sampling (PPS) technique was employed to determine the number of participants from each area, resulting in a final sample size of 401 primary caregivers of preschool children. If the primary caregiver was unable to provide relevant information, a close family member was involved. Only those caregivers, who were present at the school/ECD center along with their pre-school children, were included in the study. Non-responsive participants who declined to provide the requested data were excluded from the study, and the schools involved in pre-testing the tools were also excluded from the final analysis (Sharma, 2023).

Data Collection Tools

The dependent variable of this study was psychosocial stimulation development and the independent variables were socio-demographic and socio-economic including factors. Data were obtained via structured interviews conducted according to a set schedule and through direct observation to assess the information from the primary caregivers. In the first section, a total of nine predictors were considered, including the child's gender, number of siblings, age of children, family structure, religion, caste, father's education, mother's education, and wealth status. The wealth status tool was adapted from NDHS-2016 and measured based on household possessions, assigning a score of '1' if the item was present and '0' if not (Ministry of Health, 2017). Additionally, a housing index was created by evaluating various factors related to the condition of the house. These scores were calculated and categorized into four levels (richest, rich, poor, and poorest) aspects (Sharma et al. 2022).

In the second section, a structured interview tool was utilized to assess the knowledge and practices of primary caregivers regarding psychosocial stimulation for their preschool children, developed based on Erikson's psychosocial development theory (Widick et al., 1978). The instrument consisted of 37 bipolar-type questions, covering various aspects of stimulations such as cognitive, emotional, verbal receptiveness, prevention of restriction and discouragement, child motivation,

physical and environmental arrangements, providing of suitable play materials, and chances for daily inspiration (Bureau of Labor Statistics, U.S. Department of Labor, 2016; Ranjitkar et al., 2019 p.3; Sharma et al., 2023; Totsika & Sylva, 2004). Feedback from supervisors and subject experts was sought to ensure the suitability and clarity of the items. After pre-testing, 28 questions were used in the final implementation, measured on a binary scale with one mark allocated for a positive answers and zero for negative responses. Total number and percentage of positive replies were calculated, and the data was categorized into low, medium, and high levels of psychosocial stimulation based on relevant literatures (Sharma et al., 2023; Totsika & Sylva, 2004; Warsito et al., 2012).

Validation of Tools

The data collection tools were developed to align with the research objectives and questions, and a pre-test was conducted to ensure content and face validity. The tools were revised by the researcher, two experts, and a statistician to enhance their reliability and validity. During the pre-testing phase, a sample of 40 participants from three government-funded school/ECD centers in different areas was selected. The pre-testing helped identify and address any issues related to understandability, time consumption, uniformity, adequacy, and appropriateness of the tools. Ambiguous, misleading, and misinterpreted questions were modified based on the pre-testing findings (Leavy, 2018).

To improve reliability, Cronbach's alpha test was calculated for the psychosocial stimulation tool, yielding a value of 0.800, which was considered acceptable (Creswell, 2012). Before data collection, the data collection assistants underwent intensive training on the study's objectives and data collection techniques. Efforts were made to minimize systematic biases, and enumerators were educated on potential sources bias during data collection. Enumerators were guided through techniques like probing questions, logic patterns, and other relevant skills, who always worked under the supervision of the principal researcher. Interviews were conducted in a confidential environment, ensuring a safe space for respondents to share information without distractions.

Data Analysis

The collected data underwent a series of steps for analysis. Initially, the data were entered into an Excel sheet, and subsequently imported into IBM SPSS version 26.0 and reliable statistical techniques including Independent Sample T-test, One Way ANOVA, Post hoc analysis, and multiple regressions were used to analyze the data. During the data analysis, percentages, standard deviations, means, standard errors, and p-values were determined. The majority of the data were available in

continuous series; therefore a parametric analysis was performed. Categorical variables were summarized using counts (n) and percentages (%), while continuous variables were described using means and standard deviations (SD). Statistical tests, such as one-way ANOVA and T-tests, were conducted to examine differences and relationships between variables. A significance level of $p < 0.05$ was employed to determine statistical significance.

To facilitate analysis, the data were coded and categorized based on the characteristics of the variables. During the data analysis process, frequency adjustment was applied, which resulted in the consolidation of certain relevant categories. In the unadjusted analysis, extended forms of families were merged into the joint family category due to their shared characteristic of multiple generations residing together. Similarly, Christianity and Islam were combined into the 'Other' religion category, as they were present in smaller proportions compared to Hinduism and Buddhism. Concerning caste/ethnicity, disadvantageous and relatively advantageous Janajati groups were merged into a single category due to their similar characteristics, considering the limited number of relatively advantageous Janajati individuals. Additionally, Dalits were included in the religious minority category as they were accorded equal status within society. Lastly, to capture the overall nurturing aspect for preschool children, secondary level education and higher education for both mothers and fathers were combined as secondary and above education. For the adjusted analysis, categorical data were transformed into dummy variables using the following coding scheme: nuclear family=0, joint family=1, illiterate mothers=0, literate mother=1, illiterate father=0, literate father=1, Janajati, Dalits, and non-Dalit Tarai caste=0, advantageous caste=1 (Sharma, 2023).

To ensure the validity of the analysis, residual analysis was performed to evaluate the normality and multicollinearity of the data. Ten outliers were identified and subsequently excluded from the dependent variable to achieve a normal distribution (Sharma, 2023). Finally, a regression analysis was conducted to predict the psychosocial stimulation score of preschool children. Gender, age, number of children, religion, family structure, caste, mother's education, father's education, and wealth status were considered as predictor variables in the analysis.

The regression analysis involved the construction of five models using the stepwise selection method. The ANOVA results indicated that the entire model demonstrated a statistically significant overall fit to the observed data. The F-values exhibited a gradual decrease from the first model (109.22) to the fifth model (32.93), with all values being highly significant ($p < 0.01$), providing substantial support for the superiority of these models. Furthermore, the adjusted R-squared values showed an increase from the first to the last model, indicating improved explanatory power,

with values of 21.7%, 25.3%, 26.9%, 28.5%, and 29.0%, respectively. Concurrently, the standard error of the estimate displayed a progressive decrease from the first to the last model, suggesting a more accurate fit, with respective values of 3.80, 3.71, 3.67, 3.64, and 3.62. These findings collectively signify the robustness and goodness of fit of the subsequent models.

Ethical Considerations

Ethical approval was obtained from the Nepal Health Research Council’s Board of Ethical Review (NHRC: No. 2078-56/2021) after receiving approval issued by the Office of the Dean, Faculty of Education, Tribhuvan University. All previous researchers were acknowledged and their works cited in the study.

Results

Demographic Characteristics

As shown in Table 1, among the 401 respondent children, 50.6% were male. Additionally, 45.6% of the children were at the age of five. The majority of parents (71.6%) had two or fewer children. More than half of the respondents (55%) lived in a joint family. Furthermore, over one-third of them (34.9%) belonged to the advantageous caste/ethnicity. The majority of the respondents (94.5%) identified as Hindu. Regarding education, it was observed that illiteracy rates among preschoolers’ fathers and mothers were 14.7% and 23.7%, respectively. Furthermore, approximately one-fourth of the respondents were classified into the socioeconomic categories of the poorest, poor, rich, or richest (Table 1).

Table 1

Characteristics and Distributions of Demographic Variables

Variables	Category	N	%
Sex of children	Male	203	50.6
	Female	198	49.4
Age of children	Three years	39	09.7
	Four years	179	44.6
	Five years	183	45.6
Number of children	Two or less	287	71.6
	More than two	114	28.4
Family structure	Nuclear	190	47.4
	Joint	211	52.6

Religion	Hindu	379	94.5
	Buddhist	09	02.2
	Others	13	03.2
Castes	Dalit*	53	13.2
	Janajati	112	27.9
	Non-Dalit Terai caste	96	23.9
	Advantageous caste	140	34.9
Fathers' education	Illiterate	59	14.7
	Basic level	199	49.6
	Secondary and above	143	35.7
Mothers' education	Illiterate	95	23.7
	Basic level	181	45.1
	Secondary and above	125	31.2
Economic status	Poorest	101	25.2
	Poor	100	24.9
	Rich	101	25.2
	Richest	99	24.7
Psychosocial stimulation level	Low (Less than 52%)	119	29.7
	Medium (Between 53%-82%)	277	69.1
	High (More than or equal to 83%)	05	1.2
Total		401	100

** In Nepal, the Dalit caste is positioned at the bottom of the social ladder, representing the lowest social standing and untouchability. Meanwhile, the Janajati and non-Dalit Terai castes are considered to be positioned above Dalits but below the advantaged caste in terms of social ranking (Wikipedia, 2022).*

Determinants Factors of Psychosocial Stimulation

Table 2 presents the results of the analysis of the mean psychosocial stimulation scores, and it indicates that these scores significantly varied based on socioeconomic and demographic factors. The study identified significant differences in the mean psychosocial score with respect to the number of children ($p= 0.0001$), family structure ($p= 0.011$), caste ($p= 0.0001$), father's education ($p= 0.0001$), mother's education ($p= 0.0001$), and wealth status ($p= 0.0001$).

Table 2*Psychosocial Stimulation with Demographic Variables*

Variables	Category	Number (%)	Mean	SD	95% CI	P-value
Gender of children	Male	198(50.6)	19.92	4.29	-0.76/-0.95	.827
	Female	193 (49.4)	19.82	4.32	-0.76/-0.95	
Age of children	Three years	38(9.7)	20.47	4.14	19.11-21.83	.611
	Four years	172(44.0)	19.91	4.42	19.24-20.57	
	Five years	181(46.3)	19.71	4.22	19.09-20.33	
Number of children	Two or less	278(71.1)	20.47	4.18	1.13-2.97	.0001***
	More than two	113(28.9)	18.41	4.26	1.12-2.98	
Types of family	Nuclear	186(47.6)	19.29	4.27	-1.96/-0.25	.011*
	Joint	205(52.4)	20.40	4.27	-1.96/-0.25	
Religion	Hindu	370 (94.6)	19.84	4.36	19.39-20.28	.751
	Buddhist	09 (2.3)	20.88	2.02	19.33-22.44	
	Others	12 (3.1)	20.16	3.85	17.71-22.61	
Castes	Dalit	52(13.3)	18.88	3.89	17.80-19.96	.0001***
	Janajati	111(28.4)	19.20	3.82	18.48-19.92	
	Non-Dalit Tarai caste	94(24.0)	18.42	4.75	17.45-19.40	
	Advantageous caste	134(34.3)	21.83	3.80	21.18-22.48	
Fathers' education	Illiterate	58(14.8)	17.39	4.05	16.3-18.46	.0001***
	Basic level	196(50.1)	19.32	3.99	18.75-19.88	
	Secondary and above	137(35.0)	21.72	4.10	21.02-22.41	
Mothers' education	Illiterate	95(24.3)	17.43	4.31	16.55-18.30	.0001***
	Basic level	179(45.8)	19.52	3.88	18.95-20.09	
	Secondary and above	117(29.9)	22.40	3.53	21.75-23.04	
Wealth status	Poorest	99(25.3)	17.01	4.22	16.16-17.85	.0001***
	Poor	98(25.1)	19.27	3.96	18.48-20.07	
	Rich	99(25.3)	21.24	3.84	20.47-22.00	
	Richest	95(24.3)	22.06	3.29	21.39-22.73	
Total		391				

*Note: Significant at * $p < 0.05$, ** $p < 0.01$, *** $p < 0.0001$, # p -value calculated for T-test and ONE WAY ANOVA*

Determinant Factors of Psychosocial Stimulation through Stepwise Regression Analysis

The outcomes derived from the stepwise regression analysis indicated that wealth status, advantageous caste/ethnicity, mother's literacy, joint family, and father's literacy had a significant and positive impact on the psychosocial stimulation score of preschoolers from their caregivers (Table 3).

Table 3

Stepwise Regression Analysis and Determinant Factors of Psychosocial Stimulation

Predictors	Model 1	Model 2	Model 3	Model 4	Model 5
Wealth Status	0.468** (0.232)	0.486** (0.227)	0.423** (0.249)	0.416** (0.246)	0.210** (0.246)
Advantageous castes		0.196** (0.383)	0.193** (0.379)	0.181** (0.377)	0.180** (0.375)
Literate Mother			0.146** (0.480)	0.164** (0.478)	0.164** (0.476)
Joint family				0.133** (0.373)	0.134** (0.371)
Literate Father					0.087* (0.385)
Constant	14.495** (0.550)	13.299** (0.600)	12.923** (0.607)	12.338** (0.630)	12.126** (0.636)
Adjusted R ²	21.7%	25.3%	26.9%	28.5%	29.0%
Std. Error	3.80	3.71	3.67	3.64	3.62
F (P-value)	109.22 (P<0.01)	67.16 (P<0.01)	48.82 (P<0.01)	39.79 (P<0.01)	32.93 (P<0.01)

Dependent variable: Psychosocial stimulation score

Note: The value in parentheses represents the standard error of the estimate.

‡Based on Maximum Likelihood estimation, Significance: ** at 1% and *at 5%

According to these findings, wealth status alone in model 1 accounted for 21.7% of the variance in a child's psychosocial stimulation score ($\beta=0.468$ and adjusted R²=0.217). When advantageous caste added in model 2, the contribution was increased by 25.3%. The inclusion of mother's literacy in model 3 accounted for an additional 26.9% of the variance, and the inclusion of family type in model 4 increased the contribution to 28.5%. Finally, in model 5, which included wealth

status, caste/ethnicity, mother's literacy, family type, and father's literacy, a total of 29.0% of the variance in psychosocial stimulation score was explained.

In the final multivariable regression model, a one-unit increase in wealth status was associated with a 0.210 unit increase in the psychosocial stimulation score ($\beta=0.210$; $p<0.0001$). Similarly, a one-unit increase in caste/ethnicity was associated with a 0.180 unit increase in the psychosocial stimulation score ($\beta=0.180$; $p<0.0001$). Moreover, changing mother's education categories resulted in a 0.164 unit change in the psychosocial stimulation score ($\beta=0.164$; $p<0.001$). Additionally, transitioning from a nuclear family to a joint family was associated with a 0.134 unit increase in the psychosocial stimulation score ($\beta=0.134$; $p=0.002$). Similarly, for every unit increase in father's education, the psychosocial stimulation score increased by 0.087 units ($\beta=0.087$; $p=0.041$).

Discussion

Out of total of 401 preschool children, more than half of them (50.1%) were found in poorest and poor economic background and very less (1.2%) received high level of psychosocial stimulation from their primary caregivers. The economic status, caste/ethnicity, family type and parental education were identified as strong factors influencing the psychosocial development of preschool children.

The level of psychosocial stimulation among preschool children was notably affected by their family's financial circumstances, with those from the lowest economic backgrounds exhibiting lower levels of psychosocial stimulation compared to their counterparts from the highest economic strata. This observation aligns with previous research indicating that psychosocial stimulation consistently varies based on economic status in developing countries (Engle et al., 2011; Jeong et al., 2017). Furthermore, a study conducted in Bangladesh discovered that programs combining unconditional cash transfers with psychosocial stimulation yielded positive effects on children's neurodevelopment (Jamal et al., 2022). Similarly, research in the Dominican Republic revealed that psychosocial factors can serve as protective factors for children, but poverty remains a significant barrier to them reaching their full potential of psychosocial development (Sánchez-Vincitore & Castro, 2022). Finch (2016) also noted that higher family wealth is associated with providing high-quality home stimulation for children at 24 months of age. Moreover, it has been suggested that the parents' economic status has an impact on the home environment for their children (S K, 2022). These findings collectively underscore the substantial influence of one's economic situation on the extent of psychosocial stimulation available to children.

A significant association was observed between caste/ethnicity and overall psychosocial stimulation ratings, with children from privileged castes demonstrating higher levels of psychosocial stimulation development compared to children from other castes. However, findings from a similar study conducted in Indonesia yielded mixed results, as there was no significant correlation between ethnicity and the overall psychosocial stimulation scores for children aged 6 to 36 months. Nonetheless, the study did find statistically significant associations between the ethnicity of parents and engagement in storytelling activities (Februhartanty et al., 2007). These findings collectively suggest that children from privileged castes tend to receive greater levels of psychosocial stimulation than their counterparts from less privileged castes, where psychosocial stimulation appears to be less prevalent (Sharma et al., 2023).

This study uncovered a notable connection between family types and psychosocial stimulation, with joint family structures demonstrating a relatively positive influence on the presence of strong psychosocial stimulation for their children. This finding aligns closely with the results of a study conducted by Lingam et al. (2014), who conducted qualitative research in India and Pakistan and found that joint family setups play a crucial role in affording children proper psychosocial development opportunities. This suggests that preschool children tend to have more opportunities for psychosocial stimulation development within joint family settings.

Parental education exerts a substantial influence on psychosocial stimulation, with children of parents with higher educational levels receiving more psychosocial stimulation compared to those with illiterate parents. This observation aligns with a similar study conducted across 38 low and middle-income countries, involving 87,286 children aged 3 and 4 years, which found associations between mothers' and fathers' education levels and psychosocial stimulation (Jeong et al., 2016). Similarly, various factors, including parental education, maternal care in terms of love and affection, as well as reward and punishment practices, the frequency of a child's interactions and play with the father, family outings, and the home living environment, collectively contribute to children's developmental and psychosocial well-being (Riyadi et al., 2019).

Similarly, a multiple indicator cluster survey in the Dominican Republic underscored the significance of psychosocial factors in protecting children from adverse outcomes, with poverty identified as a major hindrance to children reaching their full potential and increasing their risk for chronic health issues throughout their lives (Sánchez-Vincitore & Castro, 2022). In a related vein, Jeong et al. (2017) conducted a study across 42 low and middle-income countries involving 98,464 children aged 3 and 4 years, revealing that educated fathers and mothers can

impart crucial parenting skills related to psychosocial stimulation to their children. Furthermore, Finch (2016) discovered that higher maternal education is associated with providing high-quality home stimulation among a sample population of 24-month-old children. Collectively, these findings underscore the pivotal role of parental education in maintaining the level of psychosocial stimulation for their children.

This study's main strengths include the attainment of the required sample size from a population with varied ethnic, cultural, and socio-economic backgrounds, as well as the presence of a comparatively high fertility rate within the district. The classification of psychosocial stimulation was based on a comprehensive literature review. Furthermore, this study addresses a critical knowledge gap in the field of child psychosocial development in Nepal and similar developing countries.

However, there are several limitations to this study that should be taken into account. The cross-sectional nature of the study means that all data were collected on the day of the survey, limiting the ability to capture longitudinal trends. The study's focus on government-funded ECD-centered settings may restrict the generalizability of its findings to all preschool children. Additionally, the study did not examine the efforts of ECD centers or teachers in implementing psychosocial stimulation practices, which could have influenced the results. The study also did not assess the IQ of mothers or primary caregivers and did not account for cultural influences that may impact child care and stimulation. Finally, the tools used to measure psychosocial stimulation were tailored for the local setting of the study area, and their validity may not be supported by evidence in all contexts.

Conclusion

The study's findings indicated that a majority of preschool children belonged to the poorest and poor economic backgrounds, with only a small fraction receiving a high level of psychosocial stimulation from their primary caregivers. Economic status, caste, family type, and parental education were identified as strong influencing factors in the psychosocial development of preschool children. These findings underscore the need for community mobilization and caregiver awareness programs aimed at enhancing psychosocial development, with particular emphasis on those from lower economic backgrounds, disadvantaged castes (including Dalit, non-Dalit Tarai caste, and Janajati groups), illiterate and single-parent households. Furthermore, it is recommended that further research be conducted, accompanied by a sustained commitment to increase resource allocation, to effectively address the root causes of inadequate psychosocial stimulation in these communities.

The findings of this study bear significant implications for evidence-based interventions and policy formulation aimed at enhancing psychosocial stimulation development outcomes among preschool children in Nepal and the countries of similar socio-demographic contexts. Specifically, the study underscores the importance of targeted interventions for preschool children hailing from economically marginalized backgrounds, including those from Dalit and non-Dalit Tarai caste, and those with illiterate parents and residing in nuclear families.

Policymakers should prioritize the allocation of resources toward the development and implementation of programs fostering healthy psychosocial stimulation development within early childhood development (ECD) centers, parents/primary caregivers counseling and healthcare establishments. Further, policymakers are encouraged to design interventions that respect and incorporate traditional psychosocial stimulation practices while simultaneously endorsing wholesome alternatives by collaborating closely with local communities. This approach should consider the diversity of cultural practices and childcare preferences prevalent in the local context of Nepal.

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Author Contribution

The first author was responsible for creating the instruments, collecting data, conducting the analyses, and drafting the initial manuscript. The second and the third authors contributed to the initial concept and draft, and both authors subsequently reviewed and provided feedback on subsequent drafts. Ultimately, all authors approved the final version of the manuscript.

References

- Batra, S. (2013). The psychosocial development of children: implications for education and society - Erik Erikson in context. *Contemporary Education Dialogue*, 10(2), 249-278. <https://doi.org/10.1177/0973184913485014>
- Britto, P. R., Lye, S. J., Proulx, K., Yousafzai, A. K., Matthews, S. G., Vaivada, T., Perez-Escamilla, R., Rao, N., Ip, P., Fernald, L. C. H., MacMillan, H., Hanson, M., Wachs, T. D., Yao, H., Yoshikawa, H., Cerezo, A., Leckman, J. F., & Bhutta, Z. A. (2017). Nurturing care: promoting early childhood

development. *The Lancet*, 389(10064), 91–102. [https://doi.org/10.1016/S0140-6736\(16\)31390-3](https://doi.org/10.1016/S0140-6736(16)31390-3)

- Bureau of Labor Statistics, U.S. Department of Labor, and N. I. for C. H. and H. D. (2016). Children of the NLSY79. In *Center for Human Resource Research (CHRR), The Ohio State University. Columbus, OH: 2019*. <https://www.nlsinfo.org/content/cohorts/nlsy79-children/other-documentation/codebook-supplement/appendix-home-sf-scales/page/0/2/#AppendixA2B>
- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Son
- Contributors, W. (n.d.). *Caste system in Nepal - Wikipedia, Google Scholar*. Retrieved April 11, 2022, from https://en.wikipedia.org/w/index.php?title=Special:CiteThisPage&page=Caste_system_in_Nepal&id=1079607918&wpFormIdentifier=titleform
- Duggan, C., & Dennis, J. (2014). The place of evidence in the treatment of sex offenders. *Criminal Behaviour and Mental Health : CBMH*, 24(3), 153-162. <https://doi.org/10.1002/cbm.1904>.
- Engle, P. L., Fernald, L. C. H., Alderman, H., Behrman, J., O’Gara, C., Yousafzai, A., De Mello, M. C., Hidrobo, M., Ulkuer, N., Ertem, I., & Iltus, S. (2011). Strategies for reducing inequalities and improving developmental outcomes for young children in low-income and middle-income countries. *The Lancet*, 378(9799), 1339–1353. [https://doi.org/10.1016/S0140-6736\(11\)60889-1](https://doi.org/10.1016/S0140-6736(11)60889-1).
- Febrihartanty, J., Usfar, A. A., Dianawati, E., Fransisca, D. O., Roshita, A., & Fahmida, U. (2007). Psychosocial care and nutritional status of children aged 6-36 months among patrilineal (Karo) and matrilineal (Minangkabau) households in Jakarta. *Asia Pacific Journal of Clinical Nutrition*, 16(2), 293-300. <https://doi.org/10.6133/apjcn.2007.16.2.14>.
- Finch, Jenna E, Jelena Obradovi’c, Aisha K., & Yousafzai, M. A. R. (2016). Maternal scaffolding and home stimulation : Key mediators of early intervention effects on children ’ s cognitive development. *Developmental Psychology*, 52(9), 1409-1421. <https://doi.org/http://dx.doi.org/10.1037/dev0000182>.
- Ghosh, S. (2013). The role of adequate nutrition on academic performance of college students in North Tripura. *International Journal of Health Sciences and Research*, 3(August), 56-63.
- Gooch, A., & Vavreck, L. (2019). How face-to-face interviews and cognitive skill affect item non-response: A randomized experiment assigning mode of interview. *Political Science Research and Methods*, 7(1), 143-62.

- Israel, G.D. (2013) *Determining sample size*. Institute of food and agricultural sciences (IFAS), University of Florida, 6, 1-5.
- Jamal, S., Rani, B., Mahmud, H., Tran, T., Fisher, J., Tofail, F., El, S., & Derakhshani, J. (2022). Effects of integrated psychosocial stimulation (PS) and unconditional cash transfer (UCT) on children's development in rural Bangladesh : A cluster randomized controlled trial. *Social Science & Medicine*, 293(November 2021), 114657. <https://doi.org/10.1016/j.socscimed.2021.114657>
- Jeong, J., McCoy, D. C., & Fink, G. (2017). Paternal and maternal education, caregivers' support for learning, and early child development in 44 low- and middle-income countries. *Early Childhood Research Quarterly*, 41(June), 136-148. <https://doi.org/10.1016/j.ecresq.2017.07.001>
- Jeong, J., McCoy, D. C., Yousafzai, A. K., Salhi, C., & Fink, G. (2016). Paternal stimulation and early child development in low-and middle-income countries. *Pediatrics*, 138(4), 1-12. <https://doi.org/10.1542/peds.2016-1357>
- Kesavelu, D., Sheela, K., & Abraham, P. (2021). Stages of psychological development of child-An overview. *International Journal of Current Research and Review*, 13(13), 74-78. <https://doi.org/10.31782/ijcrr.2021.131320>
- Khalid, M. A. (2015). Educational theories of cognitive development. *Journal of Educational and Social Research*, 5(1), 1-9.
- Knauer, H. A., Ozer, E. J., Dow, W. H., & Fernald, L. C. H. (2019). Parenting quality at two developmental periods in early childhood and their association with child development. *Early Childhood Research Quarterly*, 47, 396-404.
- Lingam, R., Gupta, P., Zafar, S., Hill, Z., Yousafzai, A., Iyengar, S., Sikander, S., Haq, Z. ul, Mehta, S., Skordis-Worrel, J., Rahman, A., & Kirkwood, B. (2014). Understanding care and feeding practices: Building blocks for a sustainable intervention in India and Pakistan. *Annals of the New York Academy of Sciences*, 1308(1), 204-217. <https://doi.org/10.1111/nyas.12326>
- Maree, J. G. (2021). The psychosocial development theory of Erik Erikson: critical overview. *Early Child Development and Care*, 191(7-8), 1107-1121.
- Ministry of Health, N. E. and I. (2017). Nepal demographic and health survey 2016. *Ministry of Health, Nepal*. <https://www.dhsprogram.com/pubs/pdf/fr336/fr336.pdf>

- Nahar, B., Hossain, M. I., Hamadani, J. D., Ahmed, T., Huda, S. N., Grantham-McGregor, S. M., & Persson, L. A. (2012). Effects of a community-based approach of food and psychosocial stimulation on growth and development of severely malnourished children in Bangladesh: A randomised trial. *European Journal of Clinical Nutrition*, 66(6), 701-709. <https://doi.org/10.1038/ejcn.2012.13>
- Nahar, B., Hossain, I., Hamadani, J. D., Ahmed, T., & Grantham-mcgregor, S. (2012). Effects of psychosocial stimulation on improving home environment and child-rearing practices : results from a community-based trial among severely malnourished children in Bangladesh. *BMC Public Health*. <https://doi.org/10.1186/1471-2458-12-622>.
- Pudasaini, B., Sharma, P., Thapa, P., & Dhungana K. (2023). Level of emotional intelligence of high school students in selected government schools in Gorkha district. *Journal of Health and Social Welfare*, 1(1), 1–6. <https://doi.org/https://doi.org/10.58196/jhsw. /v7/i3/15.12.2023>
- Ranjitkar, S., Hysing, M., Kvestad, I., Shrestha, M., Ulak, M., Shilpakar, J. S., Sintakala, R., Chandyo, R. K., Shrestha, L., & Gill, S. V. (2019). Determinants of cognitive development in the early life of children in Bhaktapur , Nepal. *Frontiers in Psychology*, 10(December), 1-10. <https://doi.org/10.3389/fpsyg.2019.02739>.
- Riyadi, H., Khomsan, A., Anwar, F., Herawati, T., Hernawati, N., Rahma, A., Diana, R., & Prasetya, G. (2019). Nutrition education and psychosocial stimulation improves child development in Rural early childhood education in Indonesia, *Journal of Food and Nutrition Research*, 7(10), 717-724. <https://doi.org/10.12691/jfnr-7-10-5>.
- S K, R. (2022). What matters most for early childhood development? Evidence from Malda district, India. *PLoS One*, 17(6), e0268985. <https://doi.org/10.1371/journal.pone.0268985>
- Sánchez-Vincitore, L. V., & Castro, A. (2022). The role of sociodemographic and psychosocial variables in early childhood development: A secondary data analysis of the 2014 and 2019 multiple indicator cluster surveys in the Dominican Republic. *PLOS Global Public Health*, 2(7), e0000465. <https://doi.org/10.1371/journal.pgph.0000465>.
- Saul, M. (2018). *Erikson's stages of development*. Simply psychology. <https://www.simplypsychology.org/Erik-Erikson.html>

- Scaglioni, S., De Cosmi, V., Ciappolino, V., Parazzini, F., Brambilla, P., & Agostoni, C. (2018). Factors influencing children's eating behaviours. *Nutrients*, *10*(6), 1-17. <https://doi.org/10.3390/nu10060706>.
- Sharma, P. (2022). Nutritional practices of the preschool-aged children and associated factors : A cross-sectional study in Rupandehi district of Nepal. *Journal of Health Promotion*, *10*, 59-72. <https://doi.org/https://doi.org/10.3126/jhp.v10i1.50988>.
- Sharma, P., & Budhathoki, C. B. (2023). Effects of primary caregivers' feeding habits on the nutrition status of pre-schoolers in Rupandehi district of Nepal. *Journal of Health Promotion*, *11*(1), 86–103. <https://doi.org/10.3126/jhp.v11i1.61206>
- Sharma, P. (2023). *Effect of Nutrition and Psychosocial Stimulation on Cognitive Development of Preschool Children in Nepal*. Tribhuvan University, Office of the Dean, Faculty of Education, Kathmandu, Nepal.
- Sharma, P., Budhathoki, C. B., Maharjan, R. K., Devkota, B., Upreti, Y. R., & Bhandari, T. R. (2022). Nutrition status and associated factors among preschool children : A cross-sectional study in Nepal. *International Journal of Elementary Education*, *11*(3), 76-83. <https://doi.org/10.11648/j.ijeeedu.20221103.12>.
- Sharma, P., Budhathoki, C. B., Maharjan, R. K., & Singh, K. (2023). Nutritional status and psychosocial stimulation associated with cognitive development in preschool children : A cross- sectional study at Western Terai , Nepal. *PLoS ONE*, *18*(3), 1-14. <https://doi.org/10.1371/journal.pone.0280032>
- Soheilipour, F., Salehiniya, H., Farajpour.kh, M., & Pishgahroudsari, M. (2019). Breakfast habits, nutritional status and their relationship with academic performance in elementary school students of tehran, iran. *Medicine and Pharmacy Reports*, *92*(1), 52-58. <https://doi.org/10.15386/cjmed-956>.
- Thomas, P. A., Liu, H., & Umberson, D. (2017). Family relationships and well-being. *Innovation in Aging*, *1*(3), 1-11. <https://doi.org/10.1093/geroni/igx025>.
- Totsika, V., & Sylva, K. (2004). The home observation for measurement of the environment revisited. *Child and Adolescent Mental Health*, *9*(1), 25-35.
- UNICEF. (2018). *Every child has an equitable chance in life: Global Annual Results Report 2018*. Global Annual Results Report. https://www.unicef.org/sites/default/files/2019-06/Global_Annual_Results_Report_2018_Goal_Area_5.pdf

- Urke, H. B., Contreras, M., & Matanda, D. J. (2018). The influence of maternal and household resources, and parental psychosocial child stimulation on early childhood development: A cross-sectional study of children 36-59 months in Honduras. *International Journal of Environmental Research and Public Health*, 15(5), 2-10. <https://doi.org/10.3390/ijerph15050926>.
- Warsito, O., Khomsan, A., Hernawati, N., & Anwar, F. (2012). Relationship between nutritional status, psychosocial stimulation, and cognitive development in preschool children in Indonesia. *Nutrition Research and Practice*, 6(5), 451-457. <https://doi.org/10.4162/nrp.2012.6.5.451>.
- Widick, C., Parker, C. A., & Knefelkamp, L. (1978). Erik Erikson and psychosocial development. *New Directions for Student Services*, 1978(4), 1-17. <https://doi.org/10.1002/ss.37119780403>