Effect of Adolescent-Led School-Based Intervention for Improving Adolescents' Nutrition in Selected Schools of Sarlahi District: a Mixed Methods Study

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11th National Summit of Health and Population Scientists in Nepal

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Background

- Adolescence has also been identified as the **second window of opportunity** for correcting nutritional inadequacies and laying the groundwork for lifelong health in adulthood. (Sparrow et al., 2021)
- Nepal has enacted several policies, strategies, plans, and programs that underscore the government's commitment to **improving adolescent nutrition**
- Despite all these efforts made, **malnutrition** among adolescents remains a **major challenge** in Nepal.
    - **32%** of adolescents are **stunted,**
    - **20.5%** of adolescent girls are **anemic,**
    - **Only 43%** of adolescent girls and 48% of adolescent boys are meeting the **minimum dietary diversity** (NNMSS 2016)

Background contd…

- Only **17% of adolescent** girls and boys participated in the school health and nutrition program; a **missed opportunity** for nutrition education for children and adolescents. (UNICEF Nepal, 2016)
- Adolescents are a **vital yet untapped resource** for progress, capable of driving nutritional change. However, they **need information and opportunities** to engage in shaping the interventions for themselves and their communities
- This study, therefore, examined the **effect of an adolescent-led school-based intervention aimed at improving nutritional outcomes** among adolescents in the selected schools within three municipalities of the Sarlahi district of Madhesh Province, one of the provinces with the highest rates of undernutrition and anemia in Nepal

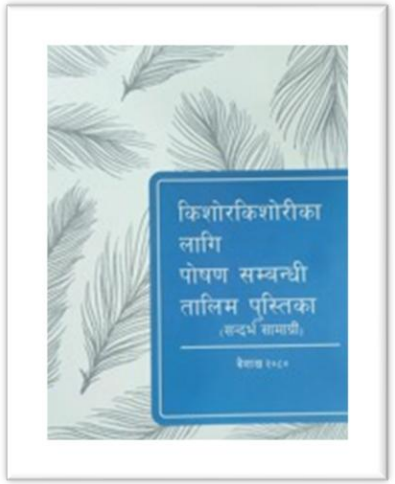
Objectives

- The study aimed to observe the effect of the adolescents-led school-based intervention from baseline to 9-month post-intervention.
- Nutrition knowledge, dietary diversity, nutrition status, health knowledge and hygiene practices.
- National weekly iron folic acid supplementation (WIFAS) and deworming program coverage.
- Access and consumption of unhealthy food.

Testing of School-Based Interventions for Improving Adolescent Nutrition in Sarlahi

(PROJECT POSHAN)

Intervention



Adolescent Nutrition Training Manual

Nutribeads (Nutrition) bracelet

Redcycle (Menstruation) bracelet

Iron Folic Acid bracelet

- The intervention was implemented in coordination with three levels of government (at central, provincial, and local levels), and the school administration
- The intervention primarily focused on capacitating and mobilizing adolescents from five intervention schools in three municipalities: Harion, Bagmati, and Barahathawa
- Training manual and study tools were developed in consultation with all the stakeholders

Innovative Intervention Tools

Daily Food Journal

Intervention contd…

- The intervention comprised a **4-day boot camp/training program** consisting of 10 sessions covering multi-sectoral aspects of adolescent **nutrition**

- **25 adolescents** were trained and mobilized in each of the five intervention schools to implement monthly school nutrition programs for 9 months through the **'Nutrition Club'**

- **Inclusion of out-of-school adolescents** was also ensured in the intervention

Nutrition and Health Bootcamp in Schools

Methodology

The quantitative study utilized data from **adolescent students across the 10 selected community schools**. Using a convenient, non-randomized approach, the schools were categorized into intervention and control groups.

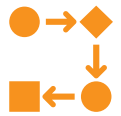
Adolescents in grades 7, 8, and 9 were conveniently recruited to participate in the study. Data was collected through a self-administered questionnaire for each grade in each school.

Bivariate analysis and multivariable analysis using **generalized estimating equations (GEE) models** were used to analyze the effect of the intervention

The qualitative data comprised **key informant interviews (KII)** with stakeholders at the school level, community level, and government authorities

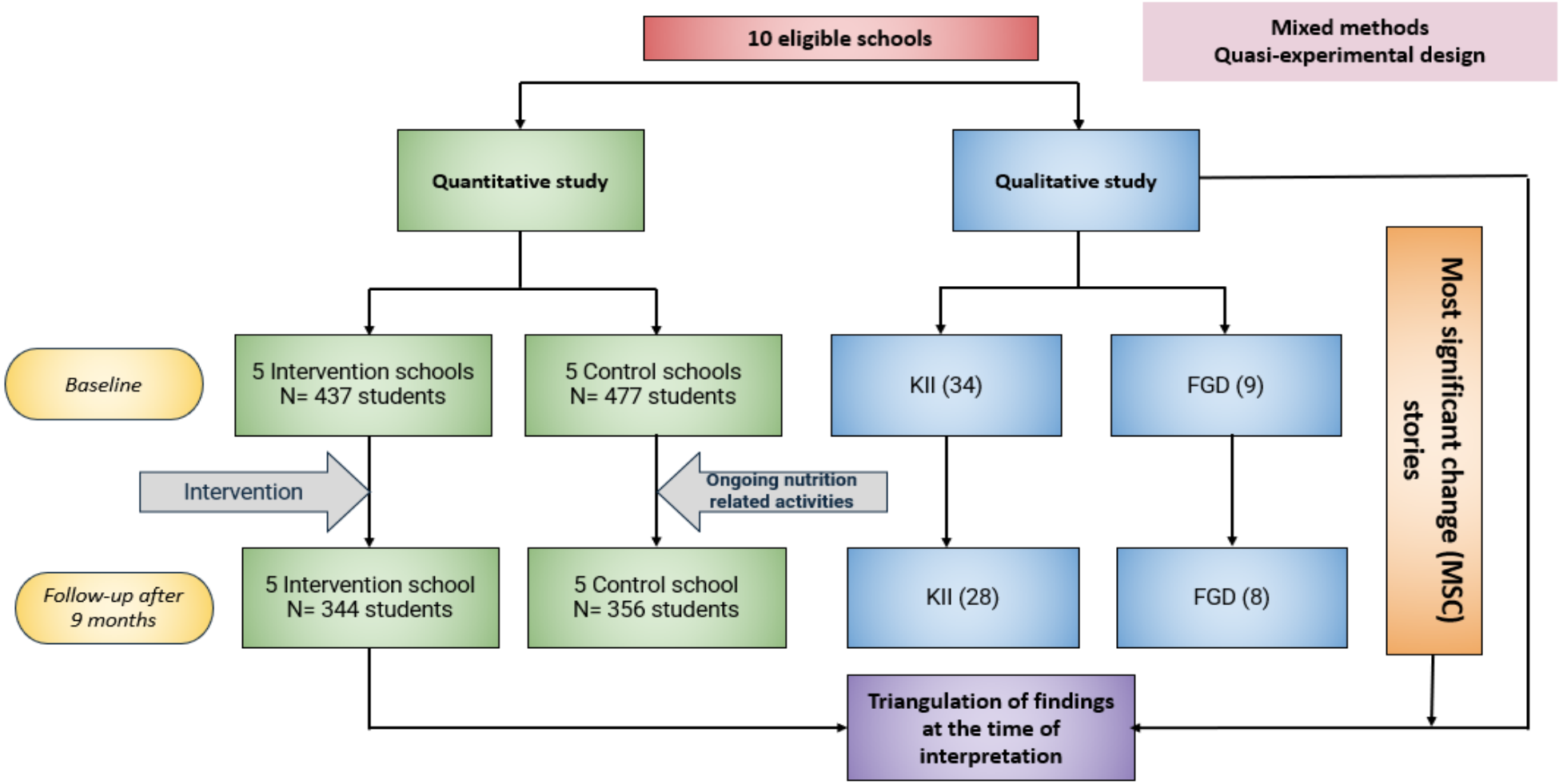
Focus group discussions (FGD) with school going adolescents, out-of-school adolescents, and parents

Thematic analysis was conducted on the qualitative data based on the five priority themes generated from the baseline study.



The Most Significant Change Stories (MSCS) were analyzed based on the changes reflecting the intervention process.

Methodology



Results: Quantitative

10% of female were found to be underweight whereas it was 39% among male respondents

75% of respondents have consumed sugary food and beverages and highly processed food, in the past 24 hours.

Around 34.8% of adolescents consumed unhealthy, ultra processed food from local shops/stalls/ markets in the tiffin break

57% adolescent girls were consuming iron folic acid (IFA) tablets as per the schedule.

69% of respondents consumed medicine for worm infestation in the past 6 months

79% of the participants had access to a smartphone and 84% had access to internet services.

53% of respondents were aware about anaemia

Results: Quantitative

Variables	Intervention Mean (SD)	Control Mean (SD)	Mean Difference (S.E)	P-value [a]	DID Coefficient (S.E)	P-value [b]
BAZ cut-off scores						
Baseline						
Undernutrition	43 (46.24)	50 (53.76)	16.27	0.413	0.018 (0.036)	0.622
Normal	381 (48.91)	398 (51.09)	4.45			
Overweight and obese	12 (37.50)	20 (62.50)	50			
Follow-up						
Undernutrition	20 (40.82)	29 (59.18)	36.7	0.331		
Normal	310 (50.16)	308 (49.84)	0.64			
Overweight and obese	14 (42.42)	19 (57.58)	30.32			

Key quantitative findings from the endline survey

	Outcomes	Effect of the intervention
1	Improvement in awareness about iron folic acid distribution in school	⇧
2	Improvement in iron folic acid intake regularly	⇧
3	Improvement in awareness about deworming program in school	⇧
4	Improvement in consumption of healthy food in school	⇧
5	Improvement in reduction in access to unhealthy food in school	No effect
6	Improvement in nutrition status	No effect
7	Improvement in intake of deworming tablets in the past 6 months	No effect
8	Improvement in Hygiene practices	No effect
9	Improvement in Dietary Diversity score	No effect

Differences in mean scores of nutrition knowledge, health knowledge, hygiene practices, and dietary practices among adolescents at baseline and nine-month follow-up

Variables	Intervention Mean (SD)	Control Mean (SD)	Mean Difference (S.E)	P-value [a]	DID Coefficient (S.E)	P-value [b]
Health knowledge score (Mean, SD)						
Baseline N=793	6.6 (2.2)	6.7 (2.1)	-0.10 (0.14)	0.456	-0.10 (0.20)	0.610
Follow-up N=700	7.3 (2.0)	7.5 (1.8)	-0.21 (0.14)	0.143		
Hygiene practices score (Mean, SD)						
Baseline N=895	2.3 (1.2)	2.2 (1.2)	0.09 (0.08)	0.216	-0.12 (0.12)	0.300
Follow-up N=700	2.2 (1.2)	2.3 (1.1)	-0.025 (0.08)	0.773		
Dietary Diversity Score						
Baseline N=914	5.7 (1.7)	6.3 (1.6)	-0.49 (0.11)	<0.001	0.515 (0.16)	0.002*
Follow-up=700	5.7 (1.7)	5.6 (1.6)	0.021 (0.12)	0.866		
Nutrition knowledge (Mean, SD)						
Baseline N=909	2.63 (1.13)	2.64 (1.32)	-0.005 (0.08)	0.9499	0.135 (0.131)	0.301
Nine-months N=700	3.11 (1.37)	2.98 (1.38)	0.130 (0.10)	0.2119		
DID: Difference-in difference, SD: Standard deviation, SE: Standard Error, [a]p-value for independent sample t-test, [b]p-value for DID						

Differences in mean scores of nutrition knowledge, health knowledge, hygiene practices, and dietary practices among adolescents at baseline and nine-month follow-up

Variables	Intervention n (%)	Control n (%)	Percent difference (%)	P-value[a]	DID Coefficient (SE)	P-value[b]
Awareness of iron folic acid program in school (yes)						
Baseline N=365	81 (54.36)	68 (45.64)	15.99	0.243	0.252 (0.07)	<0.001*
Nine-months N= 350	132 (63.77)	75 (36.23)	43.22	<0.001		
Taking iron folic acid regularly (yes)						
Baseline N=391	112 (50.97)	113 (49.03)	3.80	0.780	0.268 (0.06)	<0.001*
Nine-months N= 351	163 (59.06)	113 (40.94)	30.64	<0.001		
Taking iron folic acid in the past 13 weeks (yes)						
Baseline N=216	79 (50.97)	76 (49.03)	3.8	0.650	0.094 (0.07)	0.188
Nine-months N=272	148 (62.18)	90 (37.82)	39.17	0.003		
Awareness of deworming program in schools (yes)						
Baseline N=885	148 (55.85)	117 (44.15)	20.95	0.101	0.119 (0.04)	0.012*
Nine-months N=682	122 (54.95)	100 (45.05)	18.02%	0.057		
Deworming in the past 6 months (yes)						
Baseline N=895	271 (48.65)	286 (51.35)		0.369	0.019 (0.04)	0.696
Nine-months N=694	237 (51.08)	227 (48.92)		0.178		
Access and consumption of unhealthy food						
Access to unhealthy food within school premises (yes)						
Baseline N= 910	403 (47.36)	448 (52.64)		0.306	-0.02 (0.03)	0.451
Nine-months N=697	295 (48.12)	318 (51.88)		0.121		
Consumption of unhealthy food (yes)						
Baseline N=909	409 (48.23)	439 (51.77)		0.397	-0.09 (0.03)	0.001*
Nine-months N=697	286 (47.04)	322 (52.96)		0.001		

Results: Qualitative

Improvement in adolescent-led efforts for implementing school-based activities targeting coverage of iron folic acid supplementation, deworming, and raising awareness on health and nutrition issues.

Improvement in implementation and monitoring particularly for distribution of iron folic acid and deworming in the school and in the community after the intervention.

Improved awareness and attitude towards school health and nutrition among the stakeholders from schools and local government.

Results: Qualitative

Need of parents and community engagement in addition to school-based activities for sustained behavior change.

Need of additional efforts, particularly for inclusion of socio-economically disadvantaged and vulnerable groups in the program.

School teachers and local leaders from municipalities are recognized are primary drivers to ensure sustainability of the intervention.

Conclusion

- There was a positive effect of the intervention on **iron-folic acid distribution and awareness, raising awareness about deworming, and reducing consumption of unhealthy food**
- However, there was no significant effect on nutrition status, nutritional knowledge, health knowledge, or hygiene practices
- Establishing strong **linkages of school-based interventions with the community** is essential for long-term behavioral changes that require longer interventions and follow-up periods

Takeaway message

- **Capacitating and engaging adolescents as change-agents** of their communities can lead to improvement in adolescent nutrition
- The **localized intervention** brought adolescents together with local government, school management, parents, and other multi-sectoral stakeholders, to sensitize them on the issue of nutrition
- There are existing cost-effective entry points for **integration of this intervention through national and local campaigns**, such as National School Health and Nutrition Week, National WIFAS and deworming program, Handwashing Day, Menstrual Hygiene Day, etc

Acknowledgment

FWD, DoHS, MoHP, Nepal

UNICEF Nepal

NORAD

THANK YOU!!

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Bio

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Neha is a Registered Pharmacist and Community Nutritionist working in the sector of primary health care, maternal child health and nutrition for the past ten years. Fun loving and research oriented, she enjoys direct interaction with the community and working with children and is passionate about bridging the gap between people and their right to basic health care services, especially in rural areas.