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Cost and Consequences of Integrated Public Health Campaign in Baglung District, Nepal

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Abstract
Budget allocated, especially for new pilot program should yield beter health efects than the regular ones. The government of Nepal launched Integrated Public Health Campaign (IPHC), a new type of intervention to make rural and vulnerable communities more aware about basic level health care services and increase their utilization. This paper examines the cost of the campaign and its outcomes in terms of providing awareness, utilization of maternal health services and improving health indicators. The study followed a comparative quasi experimental design, study unit being the household and the campaign. Case and Control village development commitees (VDCs) were selected from the same territory and matched based on the criteria of IPHC and other socio-demographic & health services characteristics. Cost calculation was based on direct method whereas the efectiveness was measured by analyzing the output of campaign between case and control VDC. The total cost of the campaign was NRs. 18, 00,000 with per household cost NRs. 585.93 and per capita cost NRs. 123.11. The awareness level of Free Health Services (FHS), Primary Health Care-Out Reach Centre and Safe Delivery Incentive Program (SDIP) was found to be 3.3, 2.65 and 1.95 times more in people of Case VDC than those of Control VDC. Moreover, there was no signifcant association between implementation of campaign with diferent practices of maternal health viz. Antenatal Care visit, delivery, SDIP and post natal care visit. The campaign was found efective in improving the status of OPD visit, measles, TT2+, growth monitoring of children and vitamin A supplementation to postpartum mothers. The campaign was efective in limited aspects. In case of its continuation, revision is necessary with the introduction of newer and beter approaches.

Key words: integrated public health, cost and consequences, sanitary latrine

1. INTRODUCTION
In order to make rural and vulnerable communities more aware about basic level health care services and their utilization from diferent perspectives, Ministry of Health and Population (MoHP), Nepal had started a type of interventional program named as Integrated Public Health Campaign (IPHC) which is a holistic model health program

that includes preventive, promotive, and curative health care, especially focused to the poor, disadvantageous, and marginalized population in an integrated way. Principally, it was targeted to those places that have poor health indicators, setlement with high density of disadvantageous group, history of frequent disease outbreaks, and inaccessibility or limited accessibility to transportation facility. The campaign was conducted in four phases in selected village development commitees (VDCs) of the district in the year 2014. Phase I included the community level interventions such as home visit/household interaction providing information on free medicine, safe delivery and abortion sites, providing transportation allowance for institutional delivery along with free treatment facility for those with cancer, heart and kidney diseases; increasing public awareness on personal and environmental hygiene; and community involvement in health programs, and formation of ward level health commitees and health mother groups. Phase II included the aspects for strengthening Primary Health Care Out-Reach Clinic (PHC-ORC) by providing additional equipment, drugs and supplies. Phase III and IV focused more on curative aspects which included one day health facility level Health Camp and 2 days Comprehensive Specialized Health Camp
respectively (DHO,2012). The campaign was targeted mainly to increase the awareness on diferent aspects of free/basic health care services, increase the utilization of health services especially the maternal health and to improve the health indicators of the intervened VDCs.

Resources for the delivery of health services are limited in every country and choices need to be made as to which health services should be fnanced by the government (Brenzel, 1993). From an economics perspective, budget allocated and used for any program, especially for the pilot program should be benefcial in terms of its results or expected health efects (Wilkinson, 1999). As the IPHC is a new approach and considered more than the Essential Health Care Services at below district level, there is need to identify the consequences of it and analyzing the efectiveness of components that were addressed, which may help in deciding how this new program could be implemented in future. This may aid to inform choices about the allocation of government's scarce resources for the beterment of health outcomes (Mauskopf et al., 1998). The overall objectives of the study were to calculate the cost of the campaign; and measure the consequences to analyze its efectiveness in terms of public awareness, utilization of maternal health services and health efects produced in concerned villages. Comparison was made between the IPHC implemented (intervened) and not implemented (non-intervened) VDCs of Baglung district.

2. LITERATURE REVIEW

Public health campaigns targeted to the rural population to improve their preventive and curative health practices are common places in developing countries (Clasen

et al, 2014; Naugle & Hornik, 2014). These interventions have their respective costs and consequences. Their efectiveness is also mixed in nature. An analysis of the cost efectiveness of the national health communication program conducted in Bangladesh through various media channels indicated that such campaigns were efective in physical terms and were cost efective in enhancing antenatal care, DPT vaccine and measles vaccine. But they have scope for further improvement (Hutchinson, 2006). In contrast, the sanitation program conducted in Odisha, India to prevent diarrhea, soil-transmited helminth infection, and child malnutrition, for instance showed that though the quantitative coverage in constructing toilets were fulflled, but the real success in terms of uptake could not be assumed (Clasen et al, 2014) . Other studies have also shown that mass media campaigns have been successful in bringing about positive changes or prevent negative changes in health-related behaviours across large populations (Wakefeld, 2010). A more comprehensive review study conducted by Naugle and Hornik (2014) indicated that mass media campaigns can positively impact a wide range of child survival health behaviors in low- and middle-income countries around the world. However, the authors have warned about publication bias with more successful interventions being published while less successful ones remained unnoticed. Health seeking behavior and health related awareness are determined by a myriad of factors. There exists knowledge gap in the efectiveness of public health campaigns in terms of various health related behavioural indicators.

3. METHODOLOGY

This study followed a comparative quasi-experimental design to examine the cost and consequences Integrated Public Health Campaign, a new type of intervention to make rural and vulnerable communities more aware about basic level health care services and increase their utilization. For this purpose, treatment and control VDCs were selected on the basis of similarity of characteristics before intervention. The cost components were systematically identifed and estimated along with the intervention outcomes in terms of providing awareness, utilization of maternal health services and improving health indicators.

The study units were the household (for primary data) and campaign (for secondary data). The sample size for primary data was 150 households for each selected Case (intervened) and Control (non-intervened) VDC. Case and Control VDCs were selected from the same territory and matched based on the criteria defned by the IPHC and other similar characteristics of health services and socio-demographic status based on secondary information (Table 1).

Table 1: Indicators Matched for Selecting Case and Control VDC

Indicators	Case VDC	Control VDC
IPHC criteria	Yes	Yes
Total Population (proportion to district)	3859 (14.36%)	3580 (13.32%)
Population proportion (Male/Female percentage)	43/57	44/56
Total Household (proportion to district)	869 (14.12%)	838 (13.62%)
Average HH size	4.4	4.2
Sanitary latrine	86.42	84.12
Disadvantaged population	61.42	63.83
Under 5 Population	9.32	8.24
Disabled Population	2.17	3.49
Literacy Rate	70.22	72.36
Types of health facility available	SHP	SHP

Note: ±3 was considered in matching between case and control.

Primary data includes the awareness on diferent components of campaign and status of utilization of maternal health services by the public. Secondary data includes the cost aspect of campaign and health status (indicators) of concerned VDCs. Household interview schedule and checklist were used as the tools whereas interview with household members and record/document review along with interview with concerned ofcials were adopted as techniques for data collection. In context of some primary data like as to assess the status of awareness on diferent components, scoring was done on the basis of response received from the respondents. For every part of knowledge, three categories were identifed as fully correct (completely known), partially correct (partially known) and incorrect (unknown). Respondents knowing all the listed options kept under frst category, knowing some of the options in second category and knowing none under third category. In some cases where there was a dichotomous response, it was categorized as correct and incorrect.

For secondary data, completed checklist was entered into excel database afer manual editing. Cost related data was analyzed by using mathematical and statistical techniques. Indicators related data was analyzed and described on the basis of HMIS. Cost calculation was based on direct method whereas efectiveness analysis was done by analyzing the outputs of the campaign compared between case and control VDCs. Ethical approval was taken from Nepal Health Research Council. Permission was also taken from District Health Ofce, Baglung to conduct the study. Similarly, Individual consent was taken prior to collection of primary data.

4. RESULTS

The major titles in which the cost incurred are presented Table 2. The total cost of the campaign conducted in fve diferent villages of the district in 2014 was NRs. 1,800,000.

Table 2: Cost Calculation of IPHC

Title	**Total Cost**
Per Diem (Travel and daily allowances, TADA)	522,375.00
Drugs and Medical Supplies	387,000.00
PHC – ORC Equipment and Supplies	120,000.00
Orientation Training and Related	147,650.00
Promotion and Information, Education and Communication (IEC)	78,000.00
Transportation Related	137,500.00
Administrative Expenses	173,300.00
Supervision and Monitoring	120,000.00
Miscellaneous	114,175.00
Total Cost	**18,00,000.00**
Cost per case VDCs	**3,60,000.00**
Number of implemented VDCs : 5	

Source: Authors' estimation

The total cost of the campaign was incurred in utilizing services equally for all fve villages of the district. Hence, the cost for Case VDC was calculated as NRs. 3, 60,000.00 Taking the total population of fve VDCs in which the campaign was implemented, per household cost of IPHC was calculated as NRs. 585.93 with per capita NRs. 123.11.

Table 3: Per Household per Capita Cost of IPHC

Total cost of IPHC	**Household of IPHC area**	**Population of IPHC area**	**Per HH cost of IPHC**	**Per capita cost of IPHC**
18,00,000	3072	14620	585.93	123.11

Source: Authors' estimation

The extent of association of awareness/knowledge between case and control is shown in Table 4.

Table 4: Strength of Association on Awareness/Knowledge between Case and Control

Variables	VDC Type		Exposure Rate		P-Value	Odd's Ratio
	Case	Control	Case	Control		
Awareness on special FHS for poor with chronic diseases						
Yes	31	11	20.66	7.33	0.001	3.3
No	119	139				
Knowledge on PHC-ORC						
Yes	38	17	25.33	11.33	0.002	2.65
No	112	133				
Knowledge on ANC visit						
Correct	124	135	85.51	90.0	0.24	---
Incorrect	21	15				
Awareness on ANC Incentive						
Yes	135	130	90.0	86.66	0.36	---
No	15	20				
Knowledge ANC Incentive						
Correct	61	54	45.18	41.53	0.54	---
Incorrect	74	76				
Awareness on SDIP						
Yes	101	77	67.33	51.33	0.005	1.95
No	49	73				
Knowledge on SDIP						
Correct	88	73	87.12	94.80	0.08	---
Incorrect	13	4				
Awareness on PNC visit						
Yes	111	98	74.0	65.33	0.10	---
No	39	52				
Knowledge on PNC visit	44	57				
Correct	67	41	39.63	58.16	0.07	---
Incorrect						

Note: FHS: Free health service; PNC: post natal care; ANC: antenatal care; SDIP: Safe Delivery Incentive Program

Source: Field Survey (2015)

Analysis showed that there is statistical association between implementation of the campaign with awareness/knowledge on FHS, PHC-ORC and SDIP. The awareness/ knowledge level on FHS, PHC-ORC and SDIP is found to be 3.3, 2.65 and 1.95 times more in the people of Case VDC than those of Control VDC.

Table 5. Strength of Association on Utilization of Maternal Health Services between Case and Control

Variables	VDC Type		Exposure Rate		P-Value	Odd's Ratio
	Case	Control	Case	Control		
Practice of ANC visit						
Yes	128	124	85.33	82.66	0.5	---
No	22	26				
Place of latest delivery						
Health Facilities	70	55	46.66	36.66	0.79	---
Non-Health Facilities	80	95				
Benefted by SDIP						
Yes	66	52	94.28	94.54	0.95	---
No	4	3				
Practice of PNC visit						
Yes	80	68	53.33	45.33	0.16	---
No	70	82				

Source: Authors' estimation from feld survey data 2015.

Statistical analysis revealed that there is no signifcant diference between treatment and control VDS in terms of diferent practices of maternal health services viz. ANC visit, delivery, SDIP and PNC visit.

Table 6: Health Efects/Outcomes of VDCs before and afer campaign

Health efects/ Indicators	Case VDC		Control VDC		Changes (in %)		Z Score	P value
	Before	Afer	Before	Afer	Case	Control		
Health service utilization								
Total OPD visit in HFs	168	188	122	128	11.9	4.92	17.78	**0.0001**
Family planning								
CPR	5.7	8	9.5	11	40.35	15.79	0.93	0.176
Safe Motherhood								
ANC 1st	67	82	45	57	22.39	26.67	0.69	0.245
ANC 4th	62	91	37	60	46.77	62.16	1.08	0.140
PNC 1st	26	54	27	56	107.6	107.41	0.05	0.480
Immunization								
BCG	68	99	66	104	45.59	57.58	1.08	0.140
DPT-HepB-Polio 3	76	121	72	109	59.21	51.39	1.19	0.117
Measles	72	106	93	99	47.22	6.45	5.09	0.0001
TT 2+	64	72	37	56	12.50	51.35	2.58	0.004
Nutrition								
Growth monitoring	100	157	33	61	57.00	84.85	7.32	0.0001
IFA in pregnancy	67	82	49	63	22.39	28.57	0.22	0.412
Vit. A in postpartum	64	90	49	56	40.63	14.29	3.83	0.0001

Note: OPD: Out Patient Department; CPR: Contraceptive Prevalence Rate; IFA: Iron Folic Acid

Source: Field Survey, 2015

Table 6 revealed that afer the campaign, there was an increment in OPD visit and CPR in case VDC whereas there were improvements in safe motherhood in control VDC. Analysis showed that the campaign was efective in increasing the status of utilization of OPD visit, measles, TT2+, growth monitoring and vitamin A to postpartum mother.

5. DISCUSSION

Allocated cost and calculated cost (used-up cost) of the campaign were found to be equal, which signifes that the budget for the campaign was completely used and spent by the concerned authority. The total cost for the campaign was calculated as NRs. 18, 00,000 with per HH cost NRs. 585.93 and per capita cost NRs. 123.11. Maximum cost of the campaign was incurred for Per Diem (travel allowance and daily allowance) for mobilizing adequate number of health workers of diferent categories; followed by drugs and medical supplies that were used especially for two types of health camp.

IPHC, under the components of community intervention has focused on providing awareness and knowledge to people on diferent health aspects and services. Awareness and knowledge are correlated with each other, the former one explaining the status of known or unknown, the later one explaining exactly what is known. Comparative analysis showed that people of the Case VDC were more aware on ANC incentives, SDIP and PNC visit, whereas people of the Control VDC had more knowledge on the same aspects. This implies to the fact that people who are more aware on some aspect may not have more knowledge on the same. Moreover, as the awareness of the people from Case VDC on Special FHS, PHC-ORC and SDIP increased 3.3 times, 2.65 times and 1.95 times respectively post campaign, it can be said that the campaign was
efective only in providing information (making people aware) on those aspects as they have not widely been covered in regular IEC program at health facility level.

Awareness and knowledge on certain subject mater are related with its utilization on most of the cases. In context of utilization of maternal health services, proportions of ANC visit, institutional delivery and PNC visit were found higher in the Case VDC but an equal status was noted in both the Case and Control VDC in the utilization of SDIP. Although the utilization rate on maternal health was found more in the Case VDC, it was not due to implementation of the campaign.

Efectiveness of campaign was gauged on the basis of diferent health outcomes between intervened and non-intervened VDCs. Increment over indicators was found in both the VDCs but with some variations. Despite implementation of the campaign in Case VDC, increment was noted only in OPD visit, CPR, measles for children, TT2 for pregnant women and supplementation of vitamin A to postpartum mothers (5 out

of 12 indicators). However, the campaign has proven efective in increasing the status of utilization of OPD visit, measles for children, TT2 for pregnant women, growth monitoring for children and supplementation of vitamin A to postpartum mother. Beter status of ANC visit, iron supplementation and PNC visit in the Control VDC revealed that regular health program at below district level are doing well and there is no need to focus on maternal health by such types of campaign.

6. CONCLUSION

In this study IPHC was found efective in limited aspects only. It showed its efectiveness in providing information on Free Health Services (FHS), Primary Health Care Outreach Clinic (PHC-ORC), Antenatal Care (ANC) incentive, and Safe Delivery Incentive Program (SDIP) which are generally not encompassed in regular & extensive IEC activities of Ministry of Health and Population, Nepal. The campaign was not found efective in increasing the utilization of maternal health services. Rather it was found efective in improving the utilization of OPD visit, measles for children, TT2 for pregnant women, growth monitoring for children and supplementation of vitamin A to postpartum mother. Some improvement in the key health indicators by the campaign implied that the utilization of cost has not gone squandered. If IPHC is to be continued, revision and adoption of new and beter approaches are required.

This study recommends that the IPHC campaign should focus in providing information and services on new and special aspects of health care that are not covered by usual program. Cost disbursement should be reviewed and addressed to minimize the high cost related to human resources (per diem, supervision and monitoring) and utilize the cost on community level activities and other supporting activities. Furthermore, an extensive research is necessary to calculate other cost approaches with efectiveness analysis adjacent to the regular cost of health services in the concerned district. Non- availability of baseline information and formal report of the campaign produced by the concerned authority along with absence of relevant researches makes the study narrow and less useful for policy formulation.

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References

Brenzel, L. (1993). *Selecting an essential package of health services using cost-efectiveness analysis: A manual for professionals in developing countries*. Population, Health and Nutrition Department Population and Human Resources Sector, The World Bank and the Data for Decision Making Project Department of Population Studies and International Health Harvard School of Public Health.

Clasen, T., Boisson, S., Routray, P., Torondel, B., Bell, M., Cumming, O., ...& Ray, S. (2014). Efectiveness of a rural sanitation programme on diarrhoea, soil-transmited helminth infection, and child malnutrition in Odisha, India: a cluster-randomised trial. *The Lancet Global Health*, *2* (11), e645-e653.

DHO. (2012). *Concept paper on integrated public health campaign* . District Health Ofce, Baglung.

Hutchinson, P., & Wheeler, J. (2006). The cost-efectiveness of health communication programs: What do we know? *Journal of Health Communication* , *11*(sup2), 7-45.

Mauskopf, J.A., Paul, J.E., Grant, D.M., &Stergachis, A. (1998). The role of cost-consequence analysis in healthcare decision-making. *Pharmacoeconomics,13*(3), 277-88.

Naugle, D. A., & Hornik, R. C. (2014). Systematic review of the efectiveness of mass media interventions for child survival in low-and middle-income countries. *Journal of Health Communication*, *19* (sup1), 190-215.

Wakefeld, M. A., Loken, B., & Hornik, R. C. (2010). Use of mass media campaigns to change health behaviour. *The Lancet, 376*(9748), 1261-1271.

Wilkinson, D. (1999). Cost-beneft analysis versus cost-consequences analysis. *Performance Improvement Quarterly,12*, 71–81.