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Investigating the Impact of a Conditional Cash Transfer on Adolescent Pregnancy: Incidence and Health Outcomes

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Abstract: The literature on conditional cash transfers focuses on the impact of such on health and education outcomes. The Pantawid Pamilyang Pilipino Program in the Philippines provides a cash grant conditional on requirements related to health and education. We investigated the impact of the program on adolescent pregnancy through its link to education. The program, which is designed to increase teen education, may lead to decreased adolescent pregnancy because it adds to the opportunity cost of getting pregnant. Though the incidence of pregnancy among adolescent women rates in the Philippines have declined over the past thirty years, a considerable number of young women still experience their first birth between 15 and 19. The 2017 National Demographic Health Survey in the Philippines revealed that almost 10% of women aged 15-19 had begun childbearing, the highest rate in Southeast Asia. We used the National Demographic Health Survey for 2013 and 2017 to explore the impact of the Pantawid Pamilyang Pilipino Program on adolescent pregnancy. Results from the difference-in-difference method and coarsened exact matching revealed that, although rates of adolescent pregnancy declined from 2013 to 2017, and health-related factors such as infant birth weight, infant survival rate, and maternal health improved, these outcomes were not directly attributable to the Pantawid Pamilyang Pilipino Program. Policy recommendations include improvements in the supply-side to complement the provision of services to target the health outcomes of the children.

Key Words: conditional cash transfer, adolescent pregnancy, coarsened matching, difference-in-difference

1. INTRODUCTION

The Pantawid Pamilyang Pilipino Program (hereafter, 4Ps) is a human-development program in the Philippines. Implemented in 2007, the program has so far covered 20,000,000 Filipinos. The program's objective is two-fold: first, to provide social assistance in the form of cash grants and second, to enhance living conditions, thereby affecting health and education. One interesting area of research is the educational aspect of the conditional-cash-transfer program. This paper thus focused on whether the program has an impact on reducing teenage

pregnancy through the education link. In order to answer the research question, the paper used the difference-in-difference method and coarsened exact matching using the data from the National Demographic Health Survey in 2013 and 2017.

Our work is motivated by the increasing trend in teenage pregnancy in the Philippines, especially in rural areas. Several years before the 4Ps Program was implemented, the incidence of teenage pregnancy among women aged 15-19 was higher in rural areas. According to the Annual Poverty Indicators Survey, 13.8% of young women left school in 2016 compared to only 5.9% of young men. The three main reasons identified in the survey were lack of personal interest, insufficient family income, and marriage and family matters.

Given the rates of teenage pregnancy in the country, we investigated whether the 4Ps Program had an impact on reducing adolescent pregnancy and on health outcomes for adolescent mothers and their children.

Factors such as family background, educational attainment of parents, and income can influence the incidence of adolescent pregnancy. Evidence from several countries has shown that income and educational level are negatively correlated with adolescent pregnancy. Teenage women from lower-income families in Bolivia, for example, have fewer years of schooling and are more likely to engage in sexual relations and to get pregnant (Alfonso, 2008). The 2003 Nanda study also reported that lower levels of education were correlated with a higher incidence of adolescent pregnancy as well as with negative health outcomes for offspring among women in India. Panova et al. (2016) identified a similar situation in Russia where those less likely to attend school were more prone to adolescent pregnancy. Less well-educated adolescents are more likely to engage in risky behaviors and to be exposed to environments in which education is not a priority. Poor adolescents are more likely to have parents whose educational attainment is lower, which has a negative impact on the incidence of pregnancy among teenagers. If parents make education a low priority, children have little choice but to drop out of school or to enter the labor market, which exposes them to early relationships. Mothers' educational level is crucial in the incidence of unwanted pregnancy among teenage children.

Conditional-cash-transfer programs have been shown to influence health outcomes positively in developing countries. In a randomized control trial conducted in 2011, Orbeta, Melad, and Araos (2021) pointed out that the 4Ps Program in the Philippines helped keep poor children healthy. For instance, the program resulted in a 10% decline in the incidence of stunting as well as an increase in the intake of Vitamin A and deworming pills. Regular weight monitoring also increased. In 2013, another evaluation of the 4Ps Program showed a positive impact on health outcomes, including an increase in the uptake of prenatal and postnatal care, the growth monitoring of children from birth to 5 years of age, and an increase in the intake of Vitamin A.

The impact of a poverty-alleviation program on adolescent pregnancy and the health of teenage mothers can be modelled using a theory-of-change framework, which describes how a program leads to changes in the short and long run. The figure below shows how the 4Ps Program led to such short-term outcomes as reduced incidence of teenage pregnancy and improvements in the health of mothers and children. Additionally, the 4Ps Program allowed pregnant women to make more informed choices because they were given more information during family-development sessions. This information campaign can help other members of the family, especially teenagers and eventually helps in reducing the incidence of teenage pregnancy . Among the long term impacts of the 4Ps Program would be improved overall health when the child gets older.

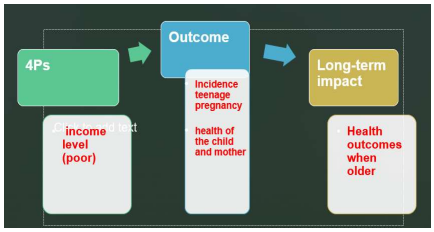

Fig. 1. Theory of Change Framework of 4Ps

2. METHODOLOGY

We used data from the Philippines National Demographic and Health Survey (NDHS) for 2013 and 2017. In 2013, the 4Ps Program expanded coverage to almost all regions of the country. The NDHS 2013 database provided the best information available to capture the pre-treatment group and, given that the usual length of the 4Ps Program is five years, the 2017 database provided the nearest post-treatment information .

2.1 Difference-in-Differences

The Difference-in-Differences estimator is represented by the interaction term between the treatment group and the post-treatment period for each observation i and time period t. The base model is specified as follows:

$$Y_{it} = \beta_0 + \beta_1 T_i + \beta_2 P_t + \beta_3 P_t * T_i + u_{it}$$

where T_i corresponds to participation in the 4Ps Program; P_t corresponds to the post-treatment year or 2017; and β_3 is the Difference-in-Differences estimate.

Here, the variables of interest are the Incidence of Teenage Pregnancy (a binary variable), child health outcomes (such as infant mortality and birth weight), and maternal health outcomes (antenatal check-ups, postnatal health check-ups, and anemia). Child and maternal health outcomes were restricted to adolescent mothers or to those who had given birth while they were from 15-19.

To further examine the impact of other variables, the full model is specified as follows:

$$Y_{it} = f(T_i, P_t, P_t * T_i, \theta_{it})$$

where θ_{it} is the vector of family characteristics and endowments that may affect the impact of the 4Ps Program, such as type of residence, educational attainment, gender of household head, household size, type of bathroom, and type of flooring.

2.2 Data Sources, Description, and Survey-Design Consistency

We used Philippines National Demographic and Health Survey data. To determine the causal effect of the 4Ps Program, 2013 and 2017 household and individual datasets were merged for a total of 41,229 observations. As these two datasets were not longitudinal, matching was necessary for further analysis. The practice of matching accounts for the confounding influence of pretreatment control variables in survey or experimental data; its main aim is to filter observations from the data in order to leave the remaining data better balanced between treated and control groups (meaning that the empirical distributions of the variables in the groups are more similar). Exactly balanced data means that further controlling for the covariates is immaterial, and, thus, a simple difference in means on matched data can capture causal effects. On the other hand, approximately balanced data requires controlling for the covariates with a model; however, the inferences are interpreted for well-matched observations in the treatment and control groups, which reduces statistical bias.

Coarsened Exact Matching (hereafter, CEM) was performed to match individuals in the two time periods. CEM is a robust method for improving the estimation of causal effects by correcting imbalances between control and treatment groups. It works by binning a set of time-invariant variables, matching the treatment and control groups with these binned (or coarsened) data, and finally running the analysis on the matched strata. It sets thresholds for model dependence and the causal effect estimation error through specification, binding monotonic imbalance such that altering the imbalance in one predictor does not affect others. Moreover, it remains robust to measurement errors and is capable of balancing in-sample nonlinearities and interactions (Blackwell et al., 2009).

Because our study began after program inception, we created a synthetic treatment group. The NDHS contains information on whether a household was registered in the 4Ps Program. The treatment group was composed of beneficiary households in the 2017 round who were registered after 2013, matched with non-beneficiaries in the 2013 round. The control group included individuals in 2013 and 2017 who were non-beneficiaries for the entire period, excluding the synthetic treatment group.

After we performed CEM on time-invariant characteristics such as birth year, ethnicity, age at first birth, and birth order, 33,175 observations remained (14,293 for 2013 and 18,882 for 2017). To ensure that our estimates were survey-design consistent, we followed best practices and performed weighting a two-cluster sampling design. This process allows more conservative standard errors in analysis as compared to the Simple Random Sampling (SRS) assumption.

The imbalance in the matched data is presented in Table 1. Blackwell et al. (2009) proposed the L 1 statistic, which represents the imbalance between groups, where L 1= 0 implies perfect balance. The multivariate distance is 0.3969 for the unmatched data. As seen in the table, the matched L 1 statistics show evidence for good balance after matching.

Table 1. Imbalance table

Variable	L_1 statistics	Difference in Means
Ethnicity	2.80E-14	-1.70E-13
Age at 1st birth	0.04036	0.04946
Birth order	0.06388	0.06388
Year of birth	0.05709	0.13582

3. RESULTS AND DISCUSSION

Before examining the short-term impacts of the conditional-cash-transfer program on teenage pregnancy and maternal health outcomes, it is important to confirm the absence of selection bias in program allocation. As per the research design, the baseline covariates for treatment and control groups for both years were compared. For all outcome variables relevant to this research, no significant differences exited at baseline between the treatment and control groups.

Table 2. Differences in means between 4Ps program non-beneficiaries and beneficiaries

Outcomes	Diff.
Incidence of Teenage Pregnancy	-0.0138
	(-1.59)
Antenatal Visits	-0.112
	(-0.61)
Birth Weight of Child (in grams)	-0.00688
	(-0.08)
Baby Born Alive	-0.00105
	(-0.09)
Had Postnatal Check-Up within Two Months	.0167212
	(0.0079)

Notes: Results for two-sample t-test are reported for continuous variables (antenatal visits, birth weight); results for two-sample test of proportions are reported for dichotomous variables (incidence of teenage pregnancy, baby born alive, postnatal check-up with two months). Asterisks denote significance levels: * p<0.10; ** p<0.05; *** p<0.01.

3.1 Difference-in-Differences Results

Table 3 shows the effect of the conditional-cash-transfer program on teenage pregnancy using the standard Difference-in-Differences model (hereafter, DID) for (1) the base model with no controls, (2) the model with rural controls, (3) the model with wealth-index controls, and (4) the model with all controls. The results show that, although the incidence of teenage pregnancy decreased by around one percentage point from 2013 to 2017 for Models 1-3, no significant direct effect of the 4Ps Program appeared to exist, a finding that was robust across all specifications. Furthermore, a significant correlation existed to the household-wealth index: those in the richest category experienced twenty to twenty-seven percentage points fewer teenage pregnancies than did the poorest segment. Moreover, education did indeed appear to lower the incidence of teenage pregnancy, as shown in Model 3, and this effect increased with higher levels of educational attainment. Additionally, both the presence of a flush toilet and flooring in the household seemed to reduce the incidence of the incidence of teenage pregnancy to some degree. We noted a weak significant correlation to the gender of the household head; the presence of women heads of household may have reduced the incidence of teenage pregnancy by around two percentage points.

Table 3. Effect of 4Ps Program on Incidence of Teenage Pregnancy

	(1) Base Model	(2) With Type of Residence	(3) With Wealth Index	(4) Full Model
4Ps Program Beneficiary	0.118***	0.110***	0.0209	-0.00668
	(0.013)	(0.013)	(0.014)	(0.014)
Post-Treatment	-0.0159*	-0.0174*	-0.0182**	-0.00231
	(0.010)	(0.010)	(0.009)	(0.009)
Difference-in-Differences	0.0179	0.0179	0.0311	0.0224
	(0.019)	(0.019)	(0.019)	(0.018)
Type of Residence (Rural)		0.0288***	0.0216**	0.0252***
		(0.009)	(0.009)	(0.009)
Wealth Index (Base: Poorest)				
Poorer			-0.0778***	-0.0536***
			(0.013)	(0.015)
Middle			-0.136***	-0.101***
			(0.014)	(0.015)
Richer			-0.192***	-0.142***
			(0.014)	(0.017)
Richest			-0.275***	-0.203***
			(0.015)	(0.018)
Educational Attainment (Base: No Education)				
Primary				
				-0.107***
Secondary				(0.031)
				-0.152***
Tertiary				(0.032)
				-0.229***
Woman Household Head				(0.032)
				-0.0114
Household Members				(0.012)
				0.0169***
Has Flush Toilet				(0.002)
				-0.0322*
Has Flooring				(0.019)
Constant	0.282***	0.270***	0.454***	0.513***
	(0.007)	(0.008)	(0.014)	(0.038)
Observations	20,830	20,830	20,830	20,815
R^2	0.013	0.014	0.045	0.063

Notes: Asterisks denote significance levels: * p<0.10; ** p<0.05; *** p<0.01.

Table 6 reports the correlation of the program on children's birth weight. While there appears to be an increase in weight of 75-80 grams between 2013 to 2017, DID estimates were not significant. Infants born into the richest households, however, appeared to be 113.5-133.8 grams heavier at birth than were those born into the poorest households. Additionally, we observed a weak significant correlation of tertiary education on increased birth weight.

Table 4. Effect of 4Ps Program on Birth Weight (Grams)

	(1) Base Model	(2) With Type of Residence	(3) With Wealth Index	(4) Full Model
4Ps Program Beneficiary	13.85	19.95	54.16	62.73*
	(35.473)	(35.298)	(36.153)	(36.224)
Post-Treatment	75.49***	77.26***	80.20***	77.47***
	(25.333)	(25.345)	(24.928)	(25.231)
Difference-in-Differences	-28.45	-28.10	-32.44	-31.71
	(49.942)	(50.055)	(49.857)	(50.432)
Type of Residence (Rural)		-25.86	-5.421	-5.452
		(22.055)	(23.740)	(23.529)
Wealth Index (Base: Poorest)				
Poorer			-24.11	-29.92
			(30.721)	(34.717)
Middle			2.896	-4.634
			(32.740)	(38.143)
Richer			33.67	21.23
			(38.675)	(43.585)
Richest			133.8***	113.5**
			(40.954)	(48.130)
Educational Attainment (Base: No Education)				
Primary				86.14
				(87.960)
Secondary				76.33
				(88.490)
Tertiary				115.8
				(90.847)
Woman Household Head				8.091
				(31.882)
Household Members				-4.457
				(4.495)
Has Flush Toilet				34.36
				(43.937)
Has Flooring				-25.13
				(36.494)
Constant	2949.4***	2960.1***	2915.9***	2851.6***
	(19.730)	(22.770)	(35.851)	(105.864)
Observations	2,504	2,504	2,504	2,504
R^2	0.002	0.002	0.007	0.007

Notes: Asterisks denote significance levels: * p<0.10; ** p<0.05; *** p<0.01.

Table 5, on the other hand, reports the correlation of the 4Ps Program on infant survival for adolescent mothers. Again, while there is a significant increase in infant survival of six to seven percentage points from 2013 to 2017 across all models, DID estimates were not significant. Education, however, did appear to have a positive effect, increasing infant survival by more than ten percentage points. Moreover, we observed a moderately significant negative correlation between infant survival and the number of household members and a woman household head.

Table 5. Effect of 4Ps Program on Infant Survival Rate

	(1) Base Model	(2) With Type of Residence	(3) With Wealth Index	(4) Full Model
4Ps Program Beneficiary	0.00914	0.0118	0.0149	-0.00372
	(0.016)	(0.016)	(0.016)	(0.016)
Post-Treatment	0.0646***	0.0652***	0.0656***	0.0710***
	(0.008)	(0.008)	(0.008)	(0.008)
Difference-in-Differences	-0.0321	-0.0322	-0.0330	-0.0476**
	(0.023)	(0.023)	(0.023)	(0.023)
Type of Residence (Rural)		-0.0107	-0.00842	-0.00871
		(0.007)	(0.007)	(0.007)
Wealth Index (Base: Poorest)				
Poorer			-0.00229	-0.0113
			(0.010)	(0.011)
Middle			0.00166	-0.0138
			(0.010)	(0.012)
Richer			0.00184	-0.0205
			(0.010)	(0.013)
Richest			0.0140	-0.0158
			(0.011)	(0.014)
Educational Attainment (Base: No Education)				
Primary				0.126**
				(4.100)
Secondary				0.184**
				(5.850)
Tertiary				0.105**
				(3.220)
Woman Household Head				0.00359
				(0.009)
Household Members				0.0118***
				(0.001)
Has Flush Toilet				-0.00495
				(0.012)
Has Flooring				0.0147
				(0.013)
Constant	0.878***	0.882***	0.878***	0.794***
	(0.007)	(0.007)	(0.011)	(0.030)
Observations	5,560	5,560	5,560	5,560
R^2	0.012	0.012	0.012	0.023

Notes: Asterisks denote significance levels: * p<0.10; ** p<0.05; *** p<0.01.

According to the terms of the conditional-cash-transfer program, expectant mothers were to have regular check-ups during pregnancy. Table 8 reports DID regression results for this variable for adolescent mothers in the dataset. Similar to previous results, a significant uptick in visits appears to have taken place between 2013 and 2017, though this did not seem to be attributable to the program alone because DID estimates were not significant. Notably, a rural resident appeared to make significantly fewer antenatal visits (0.2-0.8 fewer) than their urban counterparts across Models 2 to 4. Additionally, educational attainment was significantly correlated with antenatal visits, and the effect increased as did educational level. Tertiary graduates appear to have around 1.5 more visits over the base (no education). The number of household members seemed to negatively affect antenatal visits (coefficient = -0.13). Finally, the presence of a flush toilet appeared to significantly increase visits by 0.9.

Table 6. Effect of 4Ps Program on Antenatal Visits during Pregnancy

	(1) Base Model	(2) With Type of Residence	(3) With Wealth Index	(4) Full Model
4Ps Program Beneficiary	-1.052***	-0.825***	0.160	0.360***
	(0.105)	(0.106)	(0.108)	(0.109)
Post-Treatment	0.281***	0.319***	0.402***	0.274***
	(0.108)	(0.110)	(0.099)	(0.100)
Difference-in-Differences	-0.0532	-0.0522	-0.267	-0.198
	(0.178)	(0.174)	(0.170)	(0.171)
Type of Residence (Rural)		-0.888***	-0.231**	-0.218*
		(0.106)	(0.111)	(0.113)
Wealth Index (Base: Poorest)				
Poorer			0.854***	0.535***
			(0.114)	(0.110)
Middle			1.387***	1.000***
			(0.141)	(0.147)
Richer			2.186***	1.750***
			(0.143)	(0.146)
Richest			3.433***	2.961***
			(0.180)	(0.203)
Educational Attainment (Base: No Education)				
Primary		a		1.096***
				(0.284)
Secondary				1.117***
				(0.286)
Tertiary				1.480***
				(0.300)
Woman Household Head				-0.160
				(0.118)
Household Members				-0.133***
				(0.016)
Has Flush Toilet				0.908***
				(0.129)
Has Flooring				0.0724
				(0.120)
Constant	7.009***	7.403***	5.391***	4.450***
	(0.073)	(0.089)	(0.145)	(0.319)
Observations	3,032	3,032	3,032	3,032
R^2	0.021	0.039	0.135	0.157

Notes: Asterisks denote significance levels: * p<0.10; ** p<0.05; *** p<0.01.

Table 7 reports the results of attendance at postnatal check-ups within two months after birth. Again, the 4Ps Program seem to have no significant impact, though, rural residents seemed to be some five percentage points less likely to have postnatal check-ups within the specified time period. Moreover, educational attainment appeared to have a positive significant correlation of more than sixteen percentage points on check-ups (compared to the baseline of no education).

Table 7. Effect of 4Ps Program on Postnatal Check-Ups

	(1) Base Model	(2) With Type of Residence	(3) With Wealth Index	(4) Full Model
4Ps Program Beneficiary	-0.00740	0.00726	0.0179	0.0176
	(0.012)	(0.012)	(0.013)	(0.013)
Post-Treatment	-0.0505***	-0.0480***	-0.0471***	-0.0474***
	(0.012)	(0.012)	(0.011)	(0.012)
Difference-in-Differences	-0.0145	-0.0145	-0.0171	-0.0201
	(0.021)	(0.021)	(0.021)	(0.021)
Type of Residence (Rural)		-0.0573***	-0.0503***	-0.0504***
		(0.011)	(0.012)	(0.012)
Wealth Index (Base: Poorest)				
Poorer			0.0155	0.00477
			(0.015)	(0.016)
Middle			0.0180	0.00601
			(0.016)	(0.018)
Richer			0.0252	0.0123
			(0.017)	(0.020)
Richest			0.0374**	0.0251
			(0.018)	(0.022)
Educational Attainment (Base: No Education)				
Primary				0.155***
				(0.041)
Secondary				0.152***
				(0.041)
Tertiary				0.149***
				(0.042)
Woman Household Head				0.000585
				(0.013)
Household Members				0.000591
				(0.002)
Has Flush Toilet				0.0194
				(0.018)
Has Flooring				-0.000908
				(0.018)
Constant	0.869***	0.894***	0.870***	0.710***
	(0.007)	(0.009)	(0.016)	(0.049)
Observations	3,036	3,036	3,036	3,036
R^2	0.005	0.011	0.012	0.015

Notes: Asterisks denote significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$.

Table 8 reports the results of ordered logistic regressions on levels of educational attainment for adolescent mothers (no education, primary, secondary, and tertiary education). For both the base model and the model that included rural residence, we noted a significant and positive average treatment effect on the treated, with beneficiaries having a 0.474 and 0.379 increase in the log odds of attaining a higher level of education relative to non-beneficiaries (base model and rural-residence model, respectively). However, once we accounted for wealth and other controls, the ATET was no longer significant. Residence in a rural area and a greater number of household members were negatively associated with educational attainment, as has been reported the literature. Greater wealth and sanitation, on the other hand, were associated with greater odds of attaining higher education.

Table 8. Effect of 4Ps Program on Educational Attainment

	(1) Base Model	(2) With Type of Residence	(3) Full Model
4Ps Program Beneficiary	-1.405***	-1.213***	-0.269***
	(0.057)	(0.058)	(0.064)
Post-Treatment	0.0419	0.125***	0.189***
	(0.035)	(0.035)	(0.037)
Difference-in-Differences	0.474**	0.379**	0.0439
	(0.184)	(0.187)	(0.194)
Type of Residence (Rural)		-0.812***	-0.245***
		(0.033)	(0.037)
Wealth Index (Base: Poorest)			
Poorer			0.573***
			(0.061)
Middle			1.093***
			(0.065)
Richer			1.778***
			(0.069)
Richest			2.889***
			(0.073)
Woman Household Head			-0.00543
			(0.044)
Household Members			-0.0924***
			(0.007)
Has Flush Toilet			0.716***
			(0.069)
Has Flooring			0.0874
			(0.070)
Constant	0.869***	0.894***	0.870***
	-0.007	-0.009	-0.016
Observations	5,309	5,309	5,309
Pseudo R^2	0.0245	0.0439	0.1437

Notes: Asterisks denote significance levels: * p<0.10; ** p<0.05; *** p<0.01.

Table 9 reports the average marginal effect for each level of educational attainment for each group in the pre-treatment period. Significant effects for beneficiaries were noted in the base model, implying that the probabilities that 4Ps Program beneficiaries would have no education or primary education were 2.6 and 9.9 percentage points lower, respectively, in comparison to the pre-treatment period. Moreover, the marginal effects indicated that the predicted probabilities that beneficiaries would attain secondary and tertiary education were 6.7 and 5.8 percentage points higher, respectively, than they were prior to subjects' enrollment in the conditional-cash-transfer program.

Marginal effects with type of residence appeared largely similar, with a decreased probability of attaining lower levels of education (no education or primary), and an increased probability of attaining higher levels of education (secondary or tertiary) compared to the pre-treatment period. In addition, statistically significant secular trends were found (non-4Ps Program beneficiaries), with probabilities for each level of education decreasing in the post-treatment period; the exception was tertiary education, which showed a positive marginal effect (2.6 percentage points higher).

Finally, for the full model including wealth indicators and other control variables, significant marginal effects were observed only in the secular

trends, generally following the model with type of residence.

Table 9. Average Marginal Effect of 4Ps Program on Educational Outcomes

Base: Pre-Treatment	(1) Base Model	(2) With Type of Residence	(3) Full Model
Education: No Education			
Post * Non-4Ps Program Beneficiary	-0.001	-0.002***	-0.002**
	(0.001)	(0.001)	(0.001)
Post * 4Ps Program Beneficiary	-0.026***	-0.023***	-0.010
	(0.008)	(0.007)	(0.006)
Education: Primary			
Post * Non-4Ps Program Beneficiary	-0.008	-0.023***	-0.015**
	(0.007)	(0.006)	(0.006)
Post * 4Ps Program Beneficiary	-0.099***	-0.097***	-0.049
	(0.037)	(0.037)	(0.035)
Education: Secondary			
Post * Non-4Ps Program Beneficiary	-0.001	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)
Post * 4Ps Program Beneficiary	0.067***	0.058***	0.024
	(0.021)	(0.018)	(0.015)
Education: Tertiary			
Post * Non-4Ps Program Beneficiary	0.009	0.026***	0.018**
	(0.008)	(0.007)	(0.007)
Post * 4Ps Program Beneficiary	0.058**	0.062**	0.034
	(0.024)	(0.026)	(0.027)

Notes: Asterisks denote significance levels: * p<0.10; ** p<0.05; *** p<0.01.

4. CONCLUSIONS & RECOMMENDATIONS

The following is a summary of the results of the study and how the objectives were addressed. First, the 4Ps Program had a positive impact on higher levels of education for adolescent girls. On the other hand, while health outcomes such as infant birth weight, infant survival rate, and antenatal visits improved from the 2013 to 2017, and the incidence of teenage pregnancy declined, these improvements did not appear to be the direct result of the 4Ps Program based on DID estimates. However, an increased standard of living (as measured by the wealth index) did appear to have a significant correlation with decreased incidence of teenage pregnancy and increased antenatal visits, as well as a weaker correlation with increased infant birth weight and postnatal check-ups. Moreover, we noted a significant link between higher levels of educational attainment and decreased the incidence of teenage pregnancy, increased infant survival rate, and improved maternal health outcomes (antenatal and postnatal check-ups). The 4Ps Program also seemed to affect the level of education of adolescent mothers positively and significantly, although this effect was moderate when we controlled for such other factors as wealth and sanitary conditions.

Though health outcomes and teenage pregnancy were not directly linked to the 4Ps Program, higher levels of educational attainment and increased standard of living are seen as important factors that can lead to improved health and avoid teenage pregnancy. The 4Ps Program is intended to break the intergenerational cycle of poverty through investment in human capital (i.e., keeping children in school and providing health care and nutrition). In addressing poverty, this long-term goal may allow the poor to make better-informed rational decisions. Through access to health care and education, the 4Ps Program can help expand opportunities for beneficiaries. Being in school may reduce teenage pregnancy because it increases opportunity cost, especially at higher levels of education.

Based on our results on education outcomes, we recommend the following: (1) The ~~the~~ current ~~4Ps program~~4Ps Program grants financial support to students until they have completed senior high school~~(P700 per child in senior high school) to a student until senior high school~~. Aside from those ~~the~~ financial grants, it would be ~~that the 4Ps provide, providing supplementary educational materials might be~~ worth considering an expansion of the 4Ps Program to provide supplementary materials such as ~~. For instance,~~ school supplies, uniforms, and footwear in order to ~~and shoes/sandals might~~ strengthen the resolve of students to stay in school and perhaps to ~~. This can also motivate them to study harder and~~ eventually take a college or vocational degree; (2) On the supply side, local and national government, through the Department of Health and the Department of Education, should continue strengthening ~~the~~ infrastructure and ~~manpower~~ staffing to improve ~~that will help~~ delivery of quality education and health care to ~~the 4Ps~~ 4Ps Program beneficiaries; (3) P

~~The p~~ositive impacts on health outcomes for ~~on the~~ infants, especially ~~birthweight~~birth weight, underscore~~s~~ the importance of being mindful ~~about~~that the health care ~~given to~~ infants receive during their first 1,000 days ~~This~~ sets the foundation

for improved quality of life ~~for an individual~~ in later ~~in his older~~ years. Both prenatal and antenatal health care should be prioritized ~~by~~ with a focus on ensuring a high compliance rate among beneficiaries, possibly by ~~. This could mean setting an~~ organizing and ~~decandwel~~ advertising ~~ged~~ health services more effectively.

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