

Association of childhood vaccination with family planning, healthcare access, and women education: analysis of Nepal, Senegal and Zambia

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Supplemental Materials

A: Processing DHS variables

Table 1 shows all selected variables with information about their DHS categories and sub-categories, DHS database used, and if they were picked as control variables or not. Table 2 shows a summary of how each variable was computed based on DHS variables. We followed most suggestions given by the DHS program to calculate variables [1, 2]. Some minor changes were sometimes made, since DHS datasets are from different years/countries and variables are not always identically defined. Note we applied $\log$ –or $\log(x+1)$ – transformations to normalize some numerical variables in the regression models.

Table 1: Variables selected from DHS data, sorted by DHS category

Sub-Category	DHS database	DHS variables used	Variables	Control?
2) Population & Housing				
Household Composition	HR	hv012	Household's number of residents	X
Household drinking water	HR	hv201	Household has improved source of drinking water	X
Household Possessions	HR	hv207	Household possesses radio	X
	HR	hv208	Household possesses TV	X
	HR	hv210	Household possesses bicycle	X
	HR	hv206	Household possesses electricity	X
Type of Sanitation Facility	HR	hv205	Household has improved sanitation facility	X
	HR	hv225	Household does not share toilet with other households	X
			Household's wealth index factor (percentile)	
Wealth Quintiles	HR/WI	hv271	<i>Note only earlier DHS datasets had the WI database, other DHS datasets had this variable in the HR database</i>	X
Other	BR	v025	Household in urban area	X
3) Respondent's characteristics				
Educational Attainment of Household Members	BR	v133	Mother's years of education	
Employment and Occupation	BR	v731	Mother works or worked in past year	X
Literacy	BR	v155, v106	Mother is literate	
Other	BR	v012	Mother's age	X
4) Marriage and Sexual Activity				
Age at First Marriage	BR	v511	Mother got married younger than 18 years old	
Age at First Sexual Intercourse	BR	v531	Mother had first intercourse before 15 years old	
Current Marital Status	BR	v501	Mother has partner	X
5) Fertility				
Age at First Birth	BR	v212	Mother had first child before 18 years old	
Children Ever Born and Living	BR	v201	Mother's number of children ever born	X
6) Fertility Preferences				
Fertility Planning	BR	m10	Mother wanted pregnancy (wanted before or during pregnancy)	
7) Family Planning				
Contact of Nonusers with Family Planning Providers	BR	v394	Mother visited health facility in last 12 months	
Current Use of Contraceptive Methods	IR	v313	Mother uses modern contraceptive method	
	IR	v313, v361, v362	Mother has used or plans to use contraceptive methods	
Decision Making about Family Planning	BR	V632, v632a	Mother participates in family planning decisions	
Exposure to Family Planning Messages	BR	v384a	Mother heard about family planning in the radio (last months)	
	BR	v384b	Mother heard about family planning in TV (last months)	
	BR	v384c	Mother read about family planning in newspaper (last months)	
Informed Choice	BR	V3a02, v3a03, v3a04	Mother was told side-effects when getting contraceptives	

Knowledge of Contraceptive Methods	IR	V304_01, 02, 03, 05, 06, 07, 08, 09, 11	Mother's number of known contraceptive methods (out of 9)
Knowledge of the Fertile Period	BR	v217	Mothers knows her ovulatory cycle
9) Reproductive Health			
Antenatal Care	BR	m14	Mother had at least 1 antenatal visit during pregnancy
	BR	m42c	Mother had blood pressure taken during pregnancy
	BR	m42d	Mother had urine sample taken during pregnancy
	BR	m42e	Mother had blood sample taken during pregnancy
	BR	m42d, e	Mother had blood or urine sample taken during pregnancy
Assistance during Delivery	BR	m3a, b, c	Mother assisted during delivery by skilled provider
Place of Delivery	BR	m15	Mother delivered at home
	BR	v467c	Mother says money is a problem to access healthcare when sick
	BR	v467d	Mother says distance is a problem to access healthcare when sick
	BR	v467b	Mother says getting permission to go is a problem to access healthcare when sick
10) Child health			
Knowledge of ORS packets	BR	v416	Mother knows Oral Rehydration Salts packets
11) Nutrition of Children & Adults			
Initial Breastfeeding	BR	m4	Mother ever breastfed her child
	BR	m34/m4	Mother breastfed her child the day it was born
15) Women's Empowerment			
Attitude towards Wife Beating	BR	v744a	Mother justifies being beaten for going out without permission
	BR	v744b	Mother justifies being beaten for neglecting a child
	BR	v744c	Mother justifies being beaten for arguing with partner
	BR	v744d	Mother justifies being beaten for not having sex
	BR	v744e	Mother justifies being beaten for burning food
	BR	v744a-e	Mother justifies being beaten
Participation in Decision Making	BR	v743a, v502	Mother decides on her own health
	BR	v743b, v502	Mother decides on large household purchases
	BR	v743d, v502	Mother decides on visits to family or relatives

Table 2: Computing variables from DHS data

Variables	Calculation
2) Population & Housing	
Household's number of residents	log(hv012). if hv012==0, then we set hv012 as 1 (so we can compute the log)
Household has improved source of drinking water	TRUE if hv201 is any of the following: 11, 12, 13, 31, 32, 33, 51, 61, 71, "piped into dwelling", "piped into house/yard/plot", "piped to yard/plot", "piped into yard/plot", "public tap/standpipe", "public/neighbor's tap", "communal tap", "piped to neighbor", "piped to neighbour", "tube well or borehole", "tubewell in yard/plot", "public/neighbor's tubewell", "protected well", "protected well in yard/plot", "protected public well", "protected spring", "stone tap/dhara", "rainwater", "tanker truck", "cart with small tank", "bottled water"
Household possesses radio	TRUE if hv207 is "yes" or 1
Household possesses TV	TRUE if hv208 is "yes" or 1
Household possesses bicycle	TRUE if hv210 is "yes" or 1
Household possesses electricity	TRUE if hv206 is "yes" or 1
Household has improved sanitation facility	TRUE if hv201 is any of the following: 11, 12, 22, "flush to piped sewer system", "flush toilet", "flush to septic tank", "flush to pit latrine", "flush, don't know where", "flush to somewhere else", "ventilated improved pit latrine (vip)", "ventilated/improved pit latrine", "vip", "pit latrine with slab", "traditional pit toilet", "composting toilet". <i>DHS recommendations say that "flush to somewhere else" is not considered an improved sanitation facility, but we had to consider it as improved since earlier DHS datasets did not make this distinction and only have "flush toilet"; the number of samples with "flush to somewhere else" is minimal so it is not a big issue.</i>
Household does not share toilet with other households	TRUE if hv225 is "no" or 0
Household's wealth index factor (percentile)	Percentile of hv271 when compared to all samples (for same year-country DHS)
Household in urban area	TRUE if v025 is "urban"
3) Respondent's characteristics	
Mother's years of education	log(1+v133). if v133>90 or v133==NA, then we set v133 as 0
Mother works or worked in past year	TRUE if v731 is any of the following: 1, 2, 3, "in the past year", "currently working", "have a job, but on leave last 7 days"
Mother is literate	TRUE if v106 is 3 or "higher", or if v155 is any of the following: 1, 2, "able to read only parts of sentence", "able to read whole sentence"
Mother's age	log(v012)
4) Marriage and Sexual Activity	
Mother got married younger than 18 years old	TRUE if v511>0 and v511<18. NA values of v511 are considered to be 0 (never married)
Mother had first intercourse before 15 years old	TRUE if v531>0 and v531<15. NA values of v511 are considered to be 0
Mother has partner	TRUE if v501 is any of the following: "married", "living together", "living with partner"
5) Fertility	
Mother had first child before 18 years old	TRUE if v212<18
Mother's number of children ever born	log(v212)
6) Fertility Preferences	
Mother wanted pregnancy (wanted before or during pregnancy)	TRUE if m10 is any of the following: 1, 2, "then", "later"
7) Family Planning	
Mother visited health facility in last 12 months	TRUE if v394 is 1 or "yes"

Mother uses modern contraceptive method	TRUE if v313 is "modern method"
Mother has used or plans to use contraceptive methods	TRUE if v313 is "modern method", or either v361 or v362 is any of the following: 1, 2, 3, "in next 12 months", "use later", "unsure about timing", "currently using", "used since last birth", "used before last birth"
Mother participates in family planning decisions	TRUE if either v632 or v632a is any of the following: 1, 3, "mainly respondent", "joint decision". <i>Note some DHS datasets did not have variable v632a and was not considered in such case</i>
Mother heard about family planning in the radio	TRUE if v384a is 1 or "yes"
Mother heard about family planning in TV	TRUE if v384b is 1 or "yes"
Mother read about family planning in newspaper	TRUE if v384c is 1 or "yes"
Mother was told side-effects when getting contraceptives	TRUE if either v3a02, v3a03, or v3a04 is either 1 or "yes" <i>Note some DHS datasets did not have variable v3a02 and was not considered in such case</i>
Mother's number of known contraceptive methods	Count the number of variables among v304_01, 02, 03, 05, 06, 07, 08, 09, 11, that have any of the following values: 1, 7, "yes", "not in contraception table, but as a current method". <i>Note we only considered contraceptive methods included in all DHS datasets</i>
Mothers knows her ovulatory cycle	TRUE if v217 is any of the following: 1, 2, 3, 4, 5, "during her period", "after period ended", "middle of the cycle", "before period begins", "at any time"

9) Reproductive Health

Mother had at least 1 antenatal visit during pregnancy	TRUE if m14>0. NA values or values larger than 90 of m14 are considered to be 0
Mother had blood pressure taken during pregnancy	TRUE if m42c is 1 or "yes"
Mother had urine sample taken during pregnancy	TRUE if m42d is 1 or "yes"
Mother had blood sample taken during pregnancy	TRUE if m42e is 1 or "yes"
Mother had blood or urine sample taken during pregnancy	TRUE if either m42d or m42e is 1 or "yes"
Mother assisted during delivery by skilled provider	TRUE if m3a or m3b are any of the following: 1, "yes", "yes: doctor", "yes: nurse/midwife". <i>Note m3a and b correspond to "doctor" and "nurse/midwife" respectively for all but one DHS datasets. For Senegal 2019 DHS, m3b only corresponds to "nurse", so we also consider m3c that corresponds to "midwife" in that case.</i>
Mother delivered at home	TRUE if m15 is any of the following: 11, 12, "respondent's home", "respondents home", "other home"
Mother says money is a problem to access healthcare when sick	TRUE if v467c is any of the following: 1, "big problem", "a big problem"
Mother says distance is a problem to access healthcare when sick	TRUE if v467d is any of the following: 1, "big problem", "a big problem"
Mother says getting permission to go is a problem to access healthcare when sick	TRUE if v467b is any of the following: 1, "big problem", "a big problem"

10) Child health

Mother knows Oral Rehydration Salts packets	TRUE if v416 is any of the following: 1, 2, "used ors", "heard of ors"
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11) Nutrition of Children & Adults

Mother ever breastfed her child	TRUE if m4 is any of the following: 0 to 59, 95, "ever breastfed, not currently breastfeeding", "still breastfeeding"
Mother breastfed her child the	TRUE if m34<124 and m4 is any of the following: 0 to 59, 95, "ever breastfed, not

day it was born	currently breastfeeding", "still breastfeeding"
15) Women's Empowerment	
Mother justifies being beaten for going out without permission	TRUE if v744a is 1 or "yes"
Mother justifies being beaten for neglecting a child	TRUE if v744b is 1 or "yes"
Mother justifies being beaten for arguing with partner	TRUE if v744c is 1 or "yes"
Mother justifies being beaten for not having sex	TRUE if v744d is 1 or "yes"
Mother justifies being beaten for burning food	TRUE if v744e is 1 or "yes"
Mother justifies being beaten	TRUE if any of v744a, b, c, d, or e is 1 or "yes" TRUE if v743a is any of the following: 1, 2, 3, "respondent alone", "respondent and husband/partner", "respondent and other person".
Mother decides on her own health	Also TRUE if v502 is NOT one of the following: "currently married", "currently in union/living with a man". <i>Note later DHS datasets only ask this question to married woman, so that is why we added the v502 criteria.</i> TRUE if v743b is any of the following: 1, 2, 3, "respondent alone", "respondent and husband/partner", "respondent and other person".
Mother decides on large household purchases	Also TRUE if v502 is NOT one of the following: "currently married", "currently in union/living with a man". <i>Note later DHS datasets only ask this question to married woman, so that is why we added the v502 criteria.</i> TRUE if v743d is any of the following: 1, 2, 3, "respondent alone", "respondent and husband/partner", "respondent and other person".
Mother decides on visits to family or relatives	Also TRUE if v502 is NOT one of the following: "currently married", "currently in union/living with a man". <i>Note later DHS datasets only ask this question to married woman, so that is why we added the v502 criteria.</i>

Data sources: Various DHS [1].

Note some DHS datasets and variables had numbers instead of labels for their categorical values.

B: Additional results

Table 3: VIF of control variables

Variables	Nepal		Senegal		Zambia	
	2001	2016	2005	2019	2001-02	2018
2) Population & Housing						
Household's number of residents	1.25	1.28	1.16	1.24	1.42	1.40
Household has improved source of drinking water	1.17	1.08	1.40	1.28	1.65	1.25
Household possesses radio	1.34	1.04	1.08	1.08	1.64	1.45
Household possesses TV	1.55	1.56	2.55	2.97	2.27	3.04
Household possesses bicycle	1.64	1.54	1.19	1.15	1.17	1.25
Household possesses electricity	1.82	1.20	3.22	2.86	2.57	3.47
Household has improved sanitation facility	3.35	2.11	1.64	1.87	1.93	1.40
Household does not share toilet with other households	2.67	1.88	1.31	1.29	1.19	1.14
Household's wealth index factor (percentile)	2.87	2.28	4.87	6.92	3.51	3.88
Household in urban area	1.35	1.07	1.84	1.90	2.54	2.74
3) Respondent's characteristics						
Mother works or worked in past year	1.22	1.24	1.09	1.07	1.11	1.05
Mother's age	2.94	2.03	2.65	2.59	3.98	3.35
4) Marriage and Sexual Activity						
Mother has partner	1.03	1.03	1.06	1.06	1.22	1.18
5) Fertility						
Mother's number of children ever born	3.11	2.22	2.70	2.76	4.41	3.78

Data sources: Various DHS [1].

Each value corresponds to the VIF of the variable when compared to all other control variables

Table 4: Statistical significance of OLR coefficients of control variables

Variables	Nepal		Senegal		Zambia		Count of coefficients not containing zero	
	2001	2016	2005	2019	2001-02	2018	(90% CI)	[95% CI]
2) Population & Housing								
Household's number of residents	-0.0986 (-0.20 to 0.00) [-0.22 to 0.02]	-0.1759 (-0.33 to -0.02)* [-0.36 to 0.01]	0.0984 (0.00 to 0.20)* [-0.02 to 0.22]	0.2010 (0.05 to 0.35)* [0.02 to 0.38]*	-0.0300 (-0.18 to 0.12) [-0.21 to 0.15]	0.0327 (-0.11 to 0.18) [-0.14 to 0.20]	3	1
Household has improved source of drinking water	0.2367 (0.02 to 0.45)* [-0.02 to 0.49]	-0.1858 (-0.83 to 0.46) [-0.96 to 0.59]	-0.1759 (-0.33 to -0.02)* [-0.36 to 0.01]	0.3822 (0.08 to 0.69)* [0.02 to 0.75]*	0.7480 (0.55 to 0.95)* [0.51 to 0.99]*	0.1597 (-0.02 to 0.34) [-0.06 to 0.38]	4	2
Household possesses radio	0.8611 (0.66 to 1.06)* [0.62 to 1.10]*	0.7795 (0.44 to 1.12)* [0.38 to 1.18]*	0.2604 (0.03 to 0.49)* [-0.01 to 0.53]	0.3091 (0.07 to 0.55)* [0.02 to 0.60]*	0.2548 (0.06 to 0.45)* [0.02 to 0.49]*	0.1741 (0.00 to 0.35)* [-0.03 to 0.38]	6	4
Household possesses TV	0.9284 (0.56 to 1.29)* [0.50 to 1.36]*	0.6188 (0.36 to 0.88)* [0.31 to 0.93]*	0.3561 (0.21 to 0.50)* [0.18 to 0.53]*	0.5437 (0.32 to 0.77)* [0.27 to 0.81]*	0.7918 (0.49 to 1.09)* [0.43 to 1.15]*	0.2773 (0.09 to 0.46)* [0.05 to 0.50]*	6	6
Household possesses bicycle	0.2185 (0.01 to 0.43)* [-0.03 to 0.47]	-0.5041 (-0.75 to -0.26)* [-0.80 to -0.21]*	0.0763 (-0.12 to 0.27) [-0.15 to 0.31]	-0.2405 (-0.55 to 0.07) [-0.61 to 0.13]	0.0352 (-0.17 to 0.24) [-0.21 to 0.28]	0.0708 (-0.10 to 0.25) [-0.14 to 0.28]	2	1
Household possesses electricity	0.8123 (0.53 to 1.10)* [0.48 to 1.15]*	0.3751 (0.01 to 0.74)* [-0.06 to 0.81]	0.3140 (0.17 to 0.46)* [0.14 to 0.49]*	0.4206 (0.19 to 0.66)* [0.14 to 0.70]*	0.5897 (0.28 to 0.90)* [0.22 to 0.96]*	0.1736 (-0.02 to 0.37) [-0.06 to 0.40]	5	4
Household has improved sanitation facility	1.4301 (1.14 to 1.72)* [1.08 to 1.78]*	0.8587 (0.59 to 1.13)* [0.54 to 1.18]*	0.1952 (0.05 to 0.34)* [0.02 to 0.37]*	0.5765 (0.34 to 0.82)* [0.29 to 0.86]*	0.5564 (0.25 to 0.86)* [0.19 to 0.92]*	0.0596 (-0.11 to 0.23) [-0.15 to 0.26]	5	5
Household does not share toilet with other households	1.3717 (1.02 to 1.72)* [0.95 to 1.79]*	0.5930 (0.35 to 0.84)* [0.30 to 0.89]*	0.2590 (0.12 to 0.40)* [0.09 to 0.43]*	0.6109 (0.37 to 0.85)* [0.33 to 0.90]*	-0.0276 (-0.23 to 0.17) [-0.27 to 0.21]	0.2213 (0.05 to 0.39)* [0.02 to 0.43]*	5	5
Household's wealth index factor (percentile)	0.7893 (0.61 to 0.96)* [0.58 to 1.00]*	0.2524 (0.04 to 0.47)* [-0.01 to 0.51]	0.1006 (-0.02 to 0.22) [-0.04 to 0.24]	0.5628 (0.37 to 0.75)* [0.34 to 0.79]*	0.5351 (0.36 to 0.71)* [0.33 to 0.74]*	0.2809 (0.13 to 0.43)* [0.10 to 0.46]*	5	4
Household in urban area	0.4960 (0.08 to 0.91)* [0.00 to 0.99]	0.1043 (-0.14 to 0.35) [-0.19 to 0.40]	0.0539 (-0.09 to 0.20) [-0.12 to 0.23]	0.2916 (0.05 to 0.53)* [0.01 to 0.57]*	0.4789 (0.25 to 0.71)* [0.21 to 0.75]*	0.1785 (0.00 to 0.36) [-0.04 to 0.40]	3	2
3) Respondent's characteristics								
Mother works or worked in past year	-0.0743 (-0.33 to 0.18) [-0.37 to 0.22]	0.4708 (0.22 to 0.72)* [0.18 to 0.77]*	-0.0271 (-0.17 to 0.12) [-0.20 to 0.14]	0.1259 (-0.10 to 0.35) [-0.14 to 0.39]	-0.2325 (-0.44 to -0.03)* [-0.47 to 0.01]	-0.1591 (-0.33 to 0.01) [-0.37 to 0.05]	2	1
Mother's age	-0.4112 (-0.56 to -0.27)* [-0.58 to -0.24]*	-0.0746 (-0.25 to 0.10) [-0.28 to 0.14]	0.0167 (-0.09 to 0.12) [-0.11 to 0.14]	-0.1119 (-0.30 to 0.08) [-0.34 to 0.12]	-0.2051 (-0.34 to -0.07)* [-0.37 to -0.04]*	-0.0643 (-0.20 to 0.07) [-0.23 to 0.10]	2	2
4) Marriage and Sexual Activity								
Mother has partner	0.6179 (-0.28 to 1.52) [-0.45 to 1.69]	2.1798 (0.54 to 3.82)* [0.23 to 4.13]*	0.2132 (-0.11 to 0.53) [-0.17 to 0.60]	-0.3793 (-0.95 to 0.19) [-1.06 to 0.30]	0.0583 (-0.20 to 0.31) [-0.24 to 0.36]	0.0642 (-0.15 to 0.27) [-0.19 to 0.32]	1	1
5) Fertility								
Mother's number of children ever born	-0.3366 (-0.44 to -0.24)* [-0.46 to -0.22]*	-0.7075 (-0.93 to -0.48)* [-0.98 to -0.44]*	-0.1438 (-0.23 to -0.05)* [-0.25 to -0.04]*	-0.3690 (-0.52 to -0.22)* [-0.55 to -0.19]*	-0.2594 (-0.38 to -0.13)* [-0.41 to -0.11]*	-0.1393 (-0.25 to -0.03)* [-0.27 to -0.01]*	6	6

Data sources: Various DHS [1].

Coefficients were obtained from ordinal logistic regressions; children groups LV, MV, and 8V were used as ordinal categories and each control variable was tested separately.

** denotes CIs of coefficients not containing zero. Values represent the average value of the coefficient, parentheses “()” show 90% CI, brackets “[]” show 95% CI.*

Table 5: Average values of control variables, by DHS dataset and vaccine group

Variables	Vaccine group	Nepal		Senegal		Zambia		Count of 8V-LV differences not containing zero (95% CI)
		2001 [†]	2016 [‡]	2005 [†]	2019 [‡]	2001-02 [†]	2018 [‡]	
2) Population & Housing								
Household's number of residents	LV	6.3 (5.9 to 6.8)	6.9 (5.7 to 8.3)	11.6 (10.6 to 12.7)	11.3 (9.9 to 13.1)	7.1 (6.3 to 8.1)	6.4 (5.9 to 7.1)	2
	MV	7.0 (6.7 to 7.4)	6.1 (5.7 to 6.6)	13.2 (12.7 to 13.8)	13.0 (11.9 to 14.2)	6.3 (6.0 to 6.7)	6.0 (5.8 to 6.3)	
	8V	6.6 (6.3 to 6.8)	5.8 (5.6 to 6.0)	13.1 (12.7 to 13.5)	13.4 (12.9 to 14.0)	6.3 (6.1 to 6.5)	6.2 (6.0 to 6.3)	
	8V-LV	0.3 (-0.3 to 0.8)	-1.1 (-2.5 to 0.1)	1.5 (0.3 to 2.6)*	2.1 (0.3 to 3.7)*	-0.8 (-1.8 to 0.0)	-0.3 (-0.9 to 0.3)	
Household has improved source of drinking water	LV	53% (42% to 63%)	100% (100% to 100%)	66% (58% to 74%)	71% (61% to 82%)	28% (17% to 39%)	54% (44% to 66%)	5
	MV	76% (71% to 80%)	96% (92% to 98%)	70% (66% to 73%)	86% (81% to 91%)	39% (34% to 44%)	69% (64% to 73%)	
	8V	74% (71% to 77%)	96% (95% to 97%)	65% (62% to 68%)	87% (84% to 89%)	55% (52% to 58%)	69% (67% to 71%)	
	8V-LV	21% (11% to 33%)*	-4% (-5% to -3%)*	-1% (-9% to 7%)	15% (5% to 26%)*	27% (16% to 38%)*	15% (4% to 25%)*	
Household possesses radio	LV	30% (22% to 40%)	17% (7% to 29%)	83% (76% to 89%)	60% (48% to 71%)	36% (25% to 48%)	40% (30% to 51%)	3
	MV	29% (24% to 34%)	13% (9% to 19%)	89% (87% to 91%)	69% (62% to 75%)	40% (35% to 45%)	45% (40% to 50%)	
	8V	50% (46% to 53%)	27% (24% to 30%)	90% (88% to 92%)	72% (69% to 75%)	45% (42% to 48%)	48% (46% to 51%)	
	8V-LV	20% (9% to 28%)*	9% (-3% to 21%)	7% (1% to 14%)*	13% (1% to 25%)*	9% (-3% to 21%)	9% (-2% to 19%)	
Household possesses TV	LV	2% (0% to 6%)	33% (19% to 48%)	28% (21% to 35%)	38% (27% to 48%)	13% (6% to 20%)	23% (15% to 33%)	5
	MV	7% (5% to 10%)	34% (27% to 41%)	41% (37% to 45%)	56% (50% to 63%)	10% (7% to 13%)	30% (26% to 35%)	
	8V	14% (11% to 16%)	49% (45% to 52%)	47% (44% to 50%)	64% (61% to 67%)	21% (18% to 23%)	35% (32% to 37%)	
	8V-LV	12% (7% to 15%)*	15% (1% to 30%)*	19% (10% to 27%)*	27% (15% to 37%)*	8% (-1% to 15%)	11% (1% to 20%)*	
Household possesses bicycle	LV	10% (4% to 17%)	64% (50% to 76%)	14% (8% to 19%)	19% (12% to 30%)	35% (25% to 48%)	41% (32% to 52%)	2
	MV	31% (26% to 36%)	48% (40% to 55%)	16% (14% to 18%)	15% (10% to 20%)	35% (30% to 40%)	39% (34% to 44%)	
	8V	30% (27% to 33%)	39% (36% to 43%)	16% (14% to 18%)	13% (11% to 16%)	36% (33% to 39%)	41% (39% to 44%)	
	8V-LV	20% (13% to 26%)*	-25% (-39% to -10%)*	3% (-4% to 9%)	-7% (-16% to 2%)	0% (-12% to 11%)	0% (-11% to 10%)	
Household possesses electricity	LV	9% (3% to 16%)	81% (69% to 93%)	22% (17% to 29%)	47% (36% to 58%)	19% (10% to 28%)	20% (11% to 29%)	4
	MV	11% (8% to 15%)	87% (83% to 92%)	42% (38% to 46%)	67% (60% to 74%)	8% (5% to 11%)	29% (24% to 33%)	
	8V	22% (19% to 25%)	90% (87% to 92%)	45% (43% to 48%)	70% (67% to 73%)	17% (15% to 20%)	30% (28% to 32%)	

	8V-LV	13% (6% to 19%)*	8% (-3% to 21%)	23% (15% to 30%)*	23% (12% to 34%)*	-2% (-11% to 7%)	10% (1% to 19%)*	
Household has improved sanitation facility	LV	4% (0% to 9%)	67% (52% to 79%)	31% (24% to 39%)	52% (42% to 64%)	20% (12% to 30%)	37% (26% to 46%)	5
	MV	11% (8% to 14%)	63% (56% to 70%)	42% (38% to 46%)	67% (61% to 74%)	8% (6% to 11%)	53% (47% to 57%)	
	8V	30% (27% to 33%)	81% (78% to 83%)	44% (41% to 47%)	75% (72% to 78%)	17% (15% to 20%)	50% (48% to 53%)	
	8V-LV	26% (20% to 30%)*	14% (2% to 29%)*	14% (5% to 21%)*	23% (11% to 34%)*	-3% (-12% to 6%)	14% (4% to 24%)*	
Household does not share toilet with other households	LV	0% (0% to 2%)	40% (26% to 55%)	42% (34% to 50%)	48% (38% to 58%)	45% (33% to 57%)	49% (40% to 60%)	4
	MV	7% (5% to 10%)	48% (41% to 55%)	56% (52% to 59%)	67% (61% to 74%)	37% (32% to 43%)	48% (43% to 53%)	
	8V	20% (17% to 23%)	61% (57% to 64%)	59% (56% to 62%)	75% (72% to 77%)	38% (35% to 42%)	54% (51% to 57%)	
	8V-LV	19% (16% to 22%)*	19% (5% to 34%)*	17% (8% to 25%)*	27% (16% to 37%)*	-7% (-19% to 5%)	4% (-6% to 15%)	
Household's wealth index factor (percentile)	LV	33% (28% to 38%)	51% (43% to 59%)	44% (40% to 49%)	35% (29% to 42%)	49% (41% to 55%)	45% (38% to 51%)	5
	MV	44% (41% to 47%)	50% (46% to 54%)	54% (52% to 57%)	55% (51% to 60%)	48% (45% to 51%)	51% (48% to 54%)	
	8V	54% (52% to 55%)	54% (52% to 56%)	54% (52% to 56%)	59% (57% to 61%)	57% (55% to 59%)	55% (53% to 56%)	
	8V-LV	21% (15% to 26%)*	3% (-5% to 12%)	9% (4% to 14%)*	24% (17% to 30%)*	8% (1% to 16%)*	10% (3% to 16%)*	
Household in urban area	LV	2% (0% to 7%)	45% (31% to 60%)	28% (20% to 35%)	25% (17% to 35%)	22% (13% to 32%)	28% (18% to 37%)	3
	MV	5% (3% to 8%)	55% (47% to 62%)	40% (36% to 43%)	36% (29% to 43%)	23% (18% to 27%)	34% (29% to 38%)	
	8V	8% (6% to 9%)	55% (52% to 58%)	38% (36% to 41%)	39% (36% to 43%)	32% (29% to 35%)	36% (34% to 38%)	
	8V-LV	5% (0% to 8%)*	10% (-6% to 24%)	11% (3% to 18%)*	14% (4% to 24%)*	10% (-1% to 19%)	9% (-1% to 18%)	
3) Respondent's characteristics								
Mother works or worked in past year	LV	96% (91% to 99%)	45% (31% to 60%)	36% (29% to 44%)	48% (38% to 58%)	68% (58% to 78%)	48% (38% to 59%)	1
	MV	80% (76% to 84%)	49% (42% to 56%)	46% (42% to 49%)	49% (41% to 55%)	64% (59% to 69%)	61% (56% to 66%)	
	8V	83% (81% to 86%)	60% (56% to 63%)	43% (40% to 46%)	52% (48% to 55%)	60% (56% to 63%)	54% (51% to 56%)	
	8V-LV	-13% (-17% to -7%)*	15% (-1% to 30%)	7% (-1% to 14%)	3% (-8% to 15%)	-9% (-19% to 3%)	6% (-5% to 17%)	
Mother's age	LV	29.5 (28.1 to 31.0)	27.4 (25.7 to 29.0)	27.9 (26.7 to 29.1)	29.9 (28.4 to 31.3)	30.1 (28.3 to 31.9)	28.3 (26.8 to 30.1)	3
	MV	27.3 (26.5 to 27.9)	25.0 (24.2 to 25.8)	28.2 (27.6 to 28.7)	29.6 (28.6 to 30.5)	27.2 (26.4 to 28.0)	28.1 (27.4 to 28.8)	
	8V	26.1 (25.7 to 26.5)	25.3 (24.9 to 25.6)	28.1 (27.7 to 28.5)	29.2 (28.8 to 29.6)	26.7 (26.3 to 27.1)	27.8 (27.4 to 28.2)	
	8V-LV	-3.5 (-4.9 to -2.0)*	-2.1 (-3.7 to -0.4)*	0.2 (-1.0 to 1.5)	-0.7 (-2.2 to 0.8)	-3.3 (-5.2 to -1.5)*	-0.5 (-2.2 to 1.1)	
4) Marriage and Sexual Activity								

Mother has partner	LV	100% (100% to 100%)	100% (100% to 100%)	91% (87% to 95%)	97% (94% to 100%)	78% (68% to 88%)	78% (68% to 86%)	2
	MV	98% (97% to 99%)	99% (97% to 100%)	95% (93% to 97%)	96% (93% to 99%)	83% (79% to 86%)	79% (75% to 82%)	
	8V	99% (99% to 100%)	100% (100% to 100%)	95% (94% to 96%)	95% (93% to 96%)	83% (80% to 85%)	80% (77% to 82%)	
	8V-LV	-1% (-1% to 0%)*	0% (0% to 0%)*	4% (-1% to 9%)	-3% (-6% to 1%)	3% (-6% to 15%)	2% (-7% to 12%)	
5) Fertility								
Mother's number of children ever born	LV	4.3 (3.8 to 4.8)	3.3 (2.7 to 3.9)	4.2 (3.8 to 4.6)	4.0 (3.6 to 4.5)	5.2 (4.5 to 5.9)	4.0 (3.5 to 4.7)	6
	MV	3.5 (3.3 to 3.7)	2.6 (2.3 to 2.8)	3.9 (3.7 to 4.1)	3.8 (3.4 to 4.1)	3.9 (3.6 to 4.1)	3.7 (3.4 to 3.9)	
	8V	3.0 (2.9 to 3.1)	2.2 (2.1 to 2.3)	3.6 (3.5 to 3.8)	3.3 (3.2 to 3.4)	3.6 (3.4 to 3.7)	3.4 (3.3 to 3.5)	
	8V-LV	-1.3 (-1.8 to -0.8)*	-1.1 (-1.7 to -0.5)*	-0.6 (-1.0 to -0.2)*	-0.7 (-1.2 to -0.3)*	-1.6 (-2.3 to -0.9)*	-0.6 (-1.3 to 0.0)*	

Data sources: Various DHS [1].

[†] denotes DHS surveys where LV consists of one-year-old children with 0-2 vaccines and MV of 3-7 vaccines.

[‡] denotes DHS surveys where LV consists of one-year-old children with 0-4 vaccines and MV of 5-7 vaccines.

* denotes CIs not containing zero. Values correspond to the median of the averages of groups LV, MV, 8V, and 8V-LV differences. Value ranges in parenthesis correspond to the 95% CI obtained by a weighted bootstrap method of 1000 replications.

Table 6: Statistical significance of OLR coefficients of tested variables

Variables	Nepal		Senegal		Zambia		Count of coefficients not containing zero	
	2001	2016	2005	2019	2001-02	2018	(90% CI)	[95% CI]
3) Respondent's characteristics								
Mother's years of education	0.7543 (0.55 to 0.96)* [0.51 to 0.99]*	0.3755 (0.01 to 0.74)* [-0.06 to 0.81]	0.5258 (0.41 to 0.64)* [0.39 to 0.66]*	0.2157 (-0.03 to 0.46) [-0.08 to 0.51]	0.2604 (0.13 to 0.39)* [0.10 to 0.42]*	0.2057 (0.12 to 0.29)* [0.10 to 0.31]*	5	4
Mother is literate	1.1404 (0.87 to 1.41)* [0.81 to 1.47]*	0.1082 (-0.19 to 0.41) [-0.25 to 0.47]	0.8705 (0.67 to 1.07)* [0.63 to 1.11]*	0.3993 (0.12 to 0.68)* [0.06 to 0.74]*	0.3887 (0.17 to 0.61)* [0.13 to 0.65]*	0.4883 (0.30 to 0.68)* [0.26 to 0.72]*	5	5
4) Marriage and Sexual Activity								
Mother got married younger than 18 years old	-0.3415 (-0.60 to -0.08)* [-0.65 to -0.03]*	-0.0744 (-0.40 to 0.25) [-0.46 to 0.31]	-0.0690 (-0.24 to 0.10) [-0.27 to 0.13]	-0.0211 (-0.31 to 0.26) [-0.36 to 0.32]	0.0933 (-0.14 to 0.32) [-0.18 to 0.37]	0.0458 (-0.16 to 0.25) [-0.19 to 0.29]	1	1
Mother had first intercourse before 15 years old	-0.1735 (-0.42 to 0.07) [-0.47 to 0.12]	-0.1824 (-0.60 to 0.24) [-0.68 to 0.31]	-0.0461 (-0.25 to 0.15) [-0.28 to 0.19]	-0.4738 (-0.82 to -0.13)* [-0.88 to -0.06]*	0.0348 (-0.21 to 0.28) [-0.26 to 0.33]	-0.2409 (-0.46 to -0.02)* [-0.51 to 0.03]	2	1
5) Fertility								
Mother had first child before 18 years old	0.3807 (-0.12 to 0.88) [-0.22 to 0.98]	-0.2632 (-0.95 to 0.42) [-1.08 to 0.55]	0.2788 (-0.09 to 0.65) [-0.16 to 0.72]	-0.1290 (-0.74 to 0.48) [-0.86 to 0.60]	0.1266 (-0.34 to 0.59) [-0.43 to 0.68]	-0.1918 (-0.61 to 0.23) [-0.69 to 0.31]	0	0
6) Fertility Preferences								
Mother wanted pregnancy (wanted before or during pregnancy)	-0.3603 (-0.91 to 0.19) [-1.02 to 0.30]	0.4128 (-0.55 to 1.38) [-0.74 to 1.56]	1.1169 (0.48 to 1.76)* [0.35 to 1.88]*	2.1399 (0.71 to 3.57)* [0.44 to 3.84]*	-0.0408 (-0.55 to 0.47) [-0.65 to 0.56]	-0.5186 (-1.36 to 0.33) [-1.53 to 0.49]	2	2
7) Family Planning								
Mother visited health facility in last 12 months	0.8784 (0.67 to 1.09)* [0.63 to 1.12]*	0.5858 (0.27 to 0.90)* [0.21 to 0.96]*	0.3664 (0.20 to 0.53)* [0.17 to 0.56]*	0.8284 (0.55 to 1.10)* [0.50 to 1.16]*	0.5999 (0.36 to 0.84)* [0.31 to 0.89]*	0.5543 (0.36 to 0.75)* [0.33 to 0.78]*	6	6
Mother uses modern contraceptive method	1.9052 (1.16 to 2.65)* [1.01 to 2.80]*	1.3205 (0.44 to 2.20)* [0.27 to 2.37]*	0.2820 (-0.41 to 0.98) [-0.55 to 1.11]	2.7720 (1.87 to 3.67)* [1.70 to 3.84]*	0.9733 (0.23 to 1.72)* [0.09 to 1.86]*	1.6639 (1.12 to 2.21)* [1.02 to 2.31]*	5	5
Mother has used or plans to use contraceptive methods	2.1138 (1.46 to 2.76)* [1.34 to 2.89]*	0.4297 (-0.86 to 1.72) [-1.11 to 1.97]	0.4381 (0.13 to 0.74)* [0.08 to 0.80]*	0.9479 (0.45 to 1.45)* [0.36 to 1.54]*	1.5829 (0.87 to 2.29)* [0.74 to 2.43]*	1.7129 (1.13 to 2.30)* [1.02 to 2.41]*	5	5
Mother participates in family planning decisions	1.4832 (0.99 to 1.98)* [0.89 to 2.08]*	-0.3622 (-1.02 to 0.30) [-1.15 to 0.42]	0.1734 (-0.32 to 0.66) [-0.41 to 0.76]	0.6685 (0.16 to 1.18)* [0.06 to 1.27]*	0.1280 (-0.33 to 0.59) [-0.42 to 0.67]	1.2722 (0.81 to 1.74)* [0.72 to 1.83]*	3	3
Mother heard about family planning in the radio (last months)	0.9516 (0.72 to 1.18)* [0.68 to 1.22]*	0.3918 (0.06 to 0.72)* [0.00 to 0.79]	0.2673 (0.12 to 0.41)* [0.09 to 0.44]*	-0.1027 (-0.34 to 0.14) [-0.39 to 0.18]	0.3675 (0.13 to 0.61)* [0.08 to 0.65]*	0.3568 (0.11 to 0.61)* [0.06 to 0.66]*	5	4
Mother heard about family planning in TV (last months)	0.5267 (0.15 to 0.90)* [0.08 to 0.97]*	0.1394 (-0.25 to 0.53) [-0.33 to 0.61]	0.3480 (0.18 to 0.52)* [0.14 to 0.55]*	-0.3971 (-0.66 to -0.13)* [-0.72 to -0.08]*	0.3929 (0.00 to 0.79) [-0.08 to 0.86]	0.1903 (-0.16 to 0.54) [-0.22 to 0.60]	3	3
Mother read about family planning in newspaper (last months)	1.1192 (0.40 to 1.84)* [0.26 to 1.98]*	1.8025 (0.78 to 2.83)* [0.58 to 3.02]*	0.6646 (0.26 to 1.07)* [0.19 to 1.14]*	-0.8186 (-1.26 to -0.38)* [-1.34 to -0.30]*	0.0401 (-0.35 to 0.43) [-0.42 to 0.50]	0.1793 (-0.33 to 0.69) [-0.43 to 0.79]	4	4
Mother was told side-	1.6451	1.9893	0.5847	1.4773	1.3570	0.4071	5	4

effects when getting contraceptives	(0.92 to 2.37)* [0.78 to 2.51]*	(1.16 to 2.82)* [1.00 to 2.98]*	(-0.03 to 1.20) [-0.15 to 1.32]	(0.86 to 2.09)* [0.75 to 2.21]*	(0.68 to 2.03)* [0.55 to 2.16]*	(0.05 to 0.77)* [-0.02 to 0.84]		
Mother's number of known contraceptive methods (out of 9)	0.7554 (0.62 to 0.89)* [0.60 to 0.91]*	0.4353 (0.26 to 0.62)* [0.22 to 0.65]*	0.4185 (0.29 to 0.55)* [0.26 to 0.58]*	0.3951 (0.22 to 0.57)* [0.18 to 0.61]*	0.5183 (0.34 to 0.70)* [0.31 to 0.73]*	0.3064 (0.19 to 0.43)* [0.16 to 0.45]*	6	6
Mothers knows her ovulatory cycle	0.2595 (0.05 to 0.47)* [0.01 to 0.51]*	-0.0266 (-0.66 to 0.61) [-0.78 to 0.73]	0.0648 (-0.10 to 0.23) [-0.13 to 0.26]	0.7357 (0.48 to 0.99)* [0.43 to 1.04]*	0.2479 (0.00 to 0.50) [-0.05 to 0.55]	0.3852 (0.13 to 0.64)* [0.09 to 0.68]*	3	3
9) Reproductive Health								
Mother had at least 1 antenatal visit during pregnancy	1.1325 (0.91 to 1.36)* [0.87 to 1.40]*	0.0585 (-0.42 to 0.54) [-0.51 to 0.63]	0.7641 (0.55 to 0.98)* [0.51 to 1.02]*	0.2276 (-0.23 to 0.69) [-0.32 to 0.78]	0.5445 (0.21 to 0.88)* [0.15 to 0.94]*	0.5325 (0.15 to 0.91)* [0.08 to 0.99]*	4	4
Mother had blood pressure taken during pregnancy	0.9983 (0.73 to 1.27)* [0.67 to 1.32]*	0.3391 (0.00 to 0.68) [-0.07 to 0.74]	0.9619 (0.74 to 1.18)* [0.70 to 1.22]*	0.2511 (-0.22 to 0.72) [-0.31 to 0.81]	0.3924 (0.15 to 0.63)* [0.11 to 0.68]*	0.3663 (0.07 to 0.67)* [0.01 to 0.72]*	4	4
Mother had urine sample taken during pregnancy	0.7070 (0.32 to 1.09)* [0.25 to 1.17]*	0.0461 (-0.24 to 0.33) [-0.30 to 0.39]	0.3315 (0.16 to 0.50)* [0.13 to 0.54]*	0.3998 (0.03 to 0.77)* [-0.04 to 0.84]	0.0761 (-0.19 to 0.34) [-0.24 to 0.39]	0.1959 (0.01 to 0.38)* [-0.02 to 0.41]	4	2
Mother had blood sample taken during pregnancy	0.8511 (0.45 to 1.25)* [0.37 to 1.33]*	0.1844 (-0.10 to 0.47) [-0.15 to 0.52]	0.1403 (-0.01 to 0.29) [-0.04 to 0.32]	0.4323 (0.15 to 0.72)* [0.09 to 0.77]*	0.2220 (-0.01 to 0.46) [-0.06 to 0.50]	0.5196 (0.22 to 0.82)* [0.16 to 0.88]*	3	3
Mother had blood or urine sample taken during pregnancy	0.7348 (0.37 to 1.09)* [0.31 to 1.16]*	0.0887 (-0.21 to 0.39) [-0.27 to 0.44]	0.3479 (0.17 to 0.52)* [0.14 to 0.56]*	0.4258 (0.01 to 0.84)* [-0.07 to 0.92]	0.1870 (-0.04 to 0.42) [-0.09 to 0.46]	0.6631 (0.35 to 0.98)* [0.29 to 1.03]*	4	3
Mother assisted during delivery by skilled provider	0.7062 (0.28 to 1.14)* [0.19 to 1.22]*	0.6246 (0.34 to 0.91)* [0.29 to 0.96]*	0.0015 (-0.18 to 0.18) [-0.22 to 0.22]	0.4033 (0.11 to 0.69)* [0.06 to 0.75]*	0.1491 (-0.09 to 0.39) [-0.14 to 0.44]	0.4695 (0.25 to 0.69)* [0.21 to 0.73]*	4	4
Mother delivered at home	-0.6224 (-1.03 to -0.21)* [-1.11 to -0.13]*	-0.6888 (-0.97 to -0.41)* [-1.03 to -0.35]*	-0.2565 (-0.44 to -0.08)* [-0.47 to -0.04]*	-0.6819 (-1.00 to -0.37)* [-1.06 to -0.31]*	-0.0393 (-0.27 to 0.20) [-0.32 to 0.24]	-0.6109 (-0.85 to -0.37)* [-0.90 to -0.32]*	5	5
Mother says money is a problem to access healthcare when sick	-0.5799 (-0.83 to -0.33)* [-0.88 to -0.28]*	-0.7088 (-1.02 to -0.40)* [-1.08 to -0.33]*	0.0132 (-0.14 to 0.17) [-0.17 to 0.19]	0.1055 (-0.15 to 0.36) [-0.19 to 0.40]	-0.2951 (-0.53 to -0.06)* [-0.57 to -0.02]*	-0.0933 (-0.29 to 0.11) [-0.33 to 0.14]	3	3
Mother says distance is a problem to access healthcare when sick	-0.5541 (-0.77 to -0.34)* [-0.81 to -0.30]*	-0.4695 (-0.77 to -0.17)* [-0.83 to -0.11]*	0.0116 (-0.15 to 0.17) [-0.18 to 0.20]	-0.0646 (-0.34 to 0.21) [-0.39 to 0.26]	-0.1376 (-0.35 to 0.08) [-0.39 to 0.12]	-0.1261 (-0.32 to 0.07) [-0.36 to 0.11]	2	2
Mother says getting permission to go is a problem to access healthcare when sick	-0.3399 (-0.58 to -0.10)* [-0.62 to -0.06]*	-0.3798 (-0.65 to -0.11)* [-0.71 to -0.05]*	0.0141 (-0.29 to 0.32) [-0.35 to 0.38]	-0.2822 (-0.65 to 0.08) [-0.72 to 0.15]	-0.2767 (-0.77 to 0.22) [-0.86 to 0.31]	-0.6095 (-0.99 to -0.23)* [-1.06 to -0.16]*	3	3
10) Child health								
Mother knows Oral Rehydration Salts packets	1.3809 (0.84 to 1.92)* [0.74 to 2.02]*	1.7369 (0.51 to 2.96)* [0.28 to 3.20]*	0.4087 (0.25 to 0.56)* [0.22 to 0.59]*	0.4542 (0.20 to 0.71)* [0.15 to 0.76]*	0.3743 (-0.10 to 0.85) [-0.20 to 0.94]	0.9903 (0.44 to 1.54)* [0.34 to 1.64]*	5	5
11) Nutrition of Children & Adults								
Mother ever breastfed her child	0.2008 (-1.84 to 2.24) [-2.23 to 2.63]	-7.6832 (-54.3 to 38.9) [-63.2 to 47.8]	0.0910 (-0.55 to 0.74) [-0.68 to 0.86]	1.7803 (0.70 to 2.86)* [0.50 to 3.07]*	-6.0166 (-49.1 to 37.0) [-57.3 to 45.3]	1.3364 (0.63 to 2.05)* [0.49 to 2.18]*	2	2
Mother breastfed her child the day it was born	0.4715 (0.24 to 0.70)* [0.20 to 0.74]*	0.5992 (0.25 to 0.95)* [0.18 to 1.02]*	0.5716 (0.40 to 0.74)* [0.37 to 0.78]*	0.1960 (-0.17 to 0.56) [-0.24 to 0.63]	-0.0191 (-0.37 to 0.33) [-0.44 to 0.40]	0.5120 (0.18 to 0.84)* [0.12 to 0.91]*	4	4
15) Women's Empowerment								
Mother justifies being beaten for going out without permission	-0.2061 (-0.49 to 0.08) [-0.55 to 0.14]	-0.1819 (-0.56 to 0.20) [-0.64 to 0.27]	0.0590 (-0.09 to 0.21) [-0.12 to 0.24]	-0.1681 (-0.42 to 0.08) [-0.47 to 0.13]	0.2536 (-0.01 to 0.52) [-0.06 to 0.57]	-0.1845 (-0.38 to 0.01) [-0.41 to 0.04]	0	0
Mother justifies being	-0.2076	-0.0286	-0.0198	-0.1559	-0.0788	0.0258	0	0

beaten for neglecting a child	(-0.44 to 0.02) [-0.48 to 0.06]	(-0.33 to 0.27) [-0.38 to 0.33]	(-0.17 to 0.13) [-0.20 to 0.16]	(-0.41 to 0.10) [-0.46 to 0.14]	(-0.29 to 0.14) [-0.33 to 0.18]	(-0.16 to 0.21) [-0.20 to 0.25]		
Mother justifies being beaten for arguing with partner	-0.4812 (-0.82 to -0.15)* [-0.88 to -0.08]*	-0.0672 (-0.49 to 0.36) [-0.57 to 0.44]	0.0828 (-0.07 to 0.23) [-0.09 to 0.26]	0.0648 (-0.19 to 0.32) [-0.24 to 0.37]	-0.1403 (-0.35 to 0.07) [-0.39 to 0.11]	-0.1171 (-0.31 to 0.07) [-0.34 to 0.11]	1	1
Mother justifies being beaten for not having sex	-0.3615 (-0.88 to 0.16) [-0.98 to 0.26]	-0.5852 (-1.17 to 0.00)* [-1.28 to 0.11]	0.0568 (-0.09 to 0.20) [-0.12 to 0.23]	-0.1180 (-0.37 to 0.14) [-0.42 to 0.18]	-0.1475 (-0.35 to 0.06) [-0.39 to 0.10]	-0.2078 (-0.40 to -0.02)* [-0.43 to 0.02]	2	0
Mother justifies being beaten for burning food	-0.5470 (-0.94 to -0.15)* [-1.01 to -0.08]*	-0.9143 (-1.45 to -0.38)* [-1.56 to -0.27]*	-0.1559 (-0.32 to 0.01) [-0.35 to 0.04]	-0.0253 (-0.30 to 0.25) [-0.35 to 0.30]	-0.1625 (-0.37 to 0.04) [-0.41 to 0.08]	-0.0147 (-0.23 to 0.20) [-0.27 to 0.24]	2	2
Mother justifies being beaten	-0.1713 (-0.39 to 0.05) [-0.43 to 0.09]	-0.0827 (-0.36 to 0.20) [-0.42 to 0.25]	0.0810 (-0.08 to 0.24) [-0.11 to 0.27]	0.0439 (-0.20 to 0.29) [-0.25 to 0.34]	0.3404 (0.03 to 0.66)* [-0.03 to 0.72]	-0.1711 (-0.35 to 0.01) [-0.38 to 0.04]	1	0
Mother decides on her own health	0.3160 (0.07 to 0.56)* [0.02 to 0.61]*	0.2455 (-0.04 to 0.53) [-0.09 to 0.58]	0.2242 (0.02 to 0.42)* [-0.01 to 0.46]	0.0222 (-0.34 to 0.38) [-0.41 to 0.45]	-0.2602 (-0.49 to -0.03)* [-0.53 to 0.01]	0.5016 (0.27 to 0.73)* [0.23 to 0.78]*	4	2
Mother decides on large household purchases	0.0936 (-0.15 to 0.34) [-0.20 to 0.38]	-0.1231 (-0.43 to 0.18) [-0.49 to 0.24]	-0.1087 (-0.31 to 0.09) [-0.35 to 0.13]	0.0613 (-0.31 to 0.43) [-0.38 to 0.50]	0.0419 (-0.20 to 0.28) [-0.24 to 0.33]	0.1260 (-0.08 to 0.33) [-0.12 to 0.37]	0	0
Mother decides on visits to family or relatives	0.2169 (-0.01 to 0.45) [-0.06 to 0.49]	-0.0817 (-0.37 to 0.21) [-0.43 to 0.26]	-0.0936 (-0.25 to 0.07) [-0.28 to 0.10]	-0.1924 (-0.53 to 0.15) [-0.60 to 0.21]	0.0788 (-0.15 to 0.31) [-0.20 to 0.35]	0.3332 (0.12 to 0.55)* [0.08 to 0.59]*	1	1

Data sources: Various DHS [1].

Coefficients were obtained from ordinal logistic regressions controlling for the variables in Table 4; children groups LV, MV, and 8V were used as ordinal categories.

** denotes CIs not containing zero. Values represent median of the average value of the coefficient, parentheses “()” show 90% CI, brackets “[]” show 95% CI.*

Table 7: Average values of tested variables, by DHS dataset and vaccine group

Variables	Vaccine group	Nepal		Senegal		Zambia		Count of differences/ coefficients not containing zero (95% CI)	
		2001 [†]	2016 [‡]	2005 [†]	2019 [‡]	2001-02 [†]	2018 [‡]	8V-LV difference	OLR coefficient
3) Respondent's characteristics									
Mother's years of education	LV	0.2 (0.0 to 0.4)	2.7 (1.7 to 3.9)	0.3 (0.1 to 0.4)	1.1 (0.6 to 1.7)	4.1 (3.2 to 4.9)	4.5 (3.8 to 5.3)	3	4
	MV	0.3 (0.1 to 0.7)	3.0 (1.7 to 4.4)	0.6 (0.3 to 1.0)	1.6 (0.9 to 2.6)	4.2 (3.2 to 5.2)	5.6 (4.7 to 6.4)		
	8V	0.9 (0.4 to 1.5)	3.5 (2.2 to 4.9)	1.4 (0.9 to 1.9)	1.7 (1.0 to 2.7)	4.9 (4.0 to 5.8)	6.0 (5.2 to 6.9)		
	8V-LV	0.7 (0.2 to 1.3)*	0.8 (-0.6 to 2.1)	1.1 (0.6 to 1.7)*	0.6 (-0.3 to 1.6)	0.8 (-0.2 to 1.8)	1.5 (0.6 to 2.4)*		
Mother is literate	LV	3% (0% to 8%)	36% (24% to 52%)	3% (1% to 7%)	14% (6% to 22%)	42% (30% to 54%)	33% (23% to 44%)	3	5
	MV	14% (8% to 23%)	50% (31% to 67%)	11% (6% to 17%)	23% (13% to 35%)	42% (29% to 55%)	47% (36% to 60%)		
	8V	26% (17% to 36%)	52% (36% to 69%)	21% (14% to 28%)	23% (14% to 35%)	54% (41% to 67%)	53% (41% to 66%)		
	8V-LV	22% (12% to 32%)*	14% (-7% to 36%)	17% (10% to 26%)*	10% (-3% to 22%)	12% (-4% to 28%)	20% (5% to 36%)*		
4) Marriage and Sexual Activity									
Mother got married younger than 18 years old	LV	71% (61% to 80%)	67% (50% to 79%)	67% (58% to 74%)	51% (40% to 62%)	57% (45% to 68%)	48% (38% to 59%)	0	1
	MV	73% (63% to 83%)	62% (45% to 79%)	67% (58% to 76%)	56% (44% to 68%)	57% (43% to 70%)	44% (32% to 57%)		
	8V	69% (57% to 79%)	62% (45% to 79%)	68% (59% to 76%)	53% (39% to 65%)	59% (45% to 72%)	44% (32% to 56%)		
	8V-LV	-2% (-16% to 11%)	-5% (-24% to 14%)	1% (-10% to 13%)	3% (-13% to 17%)	3% (-13% to 17%)	-5% (-18% to 11%)		
Mother had first intercourse before 15 years old	LV	28% (20% to 38%)	19% (7% to 29%)	27% (20% to 35%)	19% (12% to 30%)	26% (17% to 38%)	32% (23% to 43%)	0	1
	MV	23% (14% to 33%)	12% (2% to 24%)	22% (15% to 31%)	25% (16% to 35%)	23% (13% to 36%)	24% (15% to 34%)		
	8V	23% (14% to 33%)	12% (2% to 21%)	23% (16% to 31%)	17% (9% to 29%)	23% (13% to 36%)	21% (11% to 31%)		
	8V-LV	-6% (-18% to 7%)	-7% (-21% to 7%)	-4% (-14% to 6%)	-3% (-14% to 9%)	-3% (-19% to 13%)	-11% (-25% to 2%)		
5) Fertility									
Mother had first child before 18 years old	LV	28% (19% to 37%)	31% (17% to 45%)	49% (41% to 58%)	26% (17% to 36%)	48% (36% to 59%)	46% (36% to 55%)	0	0
	MV	28% (17% to 39%)	24% (10% to 40%)	44% (35% to 54%)	39% (27% to 52%)	41% (28% to 55%)	46% (34% to 58%)		
	8V	36% (24% to 48%)	24% (10% to 38%)	49% (39% to 58%)	34% (21% to 47%)	46% (32% to 61%)	41% (30% to 54%)		
	8V-LV	9% (-6% to 21%)	-7% (-26% to 12%)	0% (-12% to 10%)	6% (-6% to 21%)	-3% (-19% to 14%)	-3% (-17% to 10%)		
6) Fertility Preferences									

Mother wanted pregnancy (wanted before or during pregnancy)	LV	73% (63% to 82%)	81% (69% to 91%)	92% (88% to 97%)	99% (96% to 100%)	75% (65% to 84%)	94% (90% to 99%)	0	2
	MV	66% (54% to 77%)	93% (81% to 100%)	93% (88% to 97%)	99% (91% to 100%)	77% (65% to 87%)	95% (90% to 100%)		
	8V	62% (52% to 73%)	90% (76% to 98%)	95% (90% to 98%)	100% (96% to 100%)	74% (62% to 86%)	94% (88% to 99%)		
	8V-LV	-10% (-22% to 2%)	10% (-7% to 24%)	3% (-3% to 8%)	0% (-3% to 4%)	0% (-16% to 14%)	-1% (-7% to 6%)		
7) Family Planning									
Mother visited health facility in last 12 months	LV	36% (26% to 46%)	69% (55% to 81%)	55% (47% to 64%)	64% (53% to 74%)	59% (46% to 71%)	54% (44% to 64%)	5	6
	MV	50% (39% to 61%)	71% (55% to 86%)	65% (56% to 74%)	79% (69% to 88%)	75% (64% to 86%)	71% (61% to 82%)		
	8V	66% (53% to 76%)	83% (69% to 95%)	70% (62% to 78%)	81% (70% to 90%)	83% (71% to 91%)	76% (66% to 85%)		
	8V-LV	30% (16% to 44%)*	14% (-5% to 33%)	15% (3% to 26%)*	17% (1% to 31%)*	23% (9% to 38%)*	22% (7% to 36%)*		
Mother uses modern contraceptive method	LV	14% (8% to 22%)	24% (12% to 38%)	5% (2% to 9%)	9% (4% to 16%)	16% (9% to 26%)	26% (18% to 37%)	3	5
	MV	20% (11% to 29%)	31% (17% to 48%)	8% (3% to 14%)	17% (8% to 27%)	25% (13% to 38%)	51% (39% to 61%)		
	8V	29% (18% to 39%)	38% (24% to 57%)	8% (4% to 14%)	25% (16% to 36%)	26% (14% to 39%)	57% (45% to 68%)		
	8V-LV	13% (1% to 27%)*	14% (-5% to 36%)	3% (-2% to 9%)	17% (5% to 29%)*	10% (-4% to 23%)	30% (16% to 45%)*		
Mother has used or plans to use contraceptive methods	LV	79% (71% to 87%)	100% (100% to 100%)	35% (27% to 43%)	34% (22% to 45%)	84% (74% to 91%)	78% (69% to 86%)	5	5
	MV	87% (78% to 93%)	93% (81% to 100%)	43% (33% to 51%)	52% (39% to 64%)	91% (84% to 99%)	86% (78% to 94%)		
	8V	92% (86% to 98%)	95% (88% to 100%)	44% (36% to 53%)	57% (45% to 70%)	94% (88% to 100%)	93% (87% to 98%)		
	8V-LV	13% (3% to 23%)*	-5% (-12% to 0%)*	10% (-1% to 21%)	23% (6% to 40%)*	12% (1% to 22%)*	15% (6% to 26%)*		
Mother participates in family planning decisions	LV	14% (8% to 22%)	81% (67% to 91%)	3% (1% to 7%)	48% (38% to 60%)	30% (20% to 42%)	45% (33% to 55%)	3	3
	MV	21% (13% to 30%)	81% (67% to 93%)	8% (3% to 13%)	56% (43% to 68%)	35% (23% to 46%)	61% (48% to 74%)		
	8V	30% (20% to 41%)	76% (62% to 90%)	6% (3% to 12%)	64% (52% to 75%)	35% (23% to 49%)	63% (51% to 76%)		
	8V-LV	14% (2% to 28%)*	-2% (-21% to 17%)	3% (-2% to 8%)	16% (0% to 31%)*	4% (-10% to 20%)	20% (5% to 32%)*		
Mother heard about family planning in the radio (last months)	LV	29% (20% to 39%)	2% (0% to 10%)	36% (29% to 43%)	39% (29% to 51%)	41% (29% to 51%)	9% (5% to 16%)	3	4
	MV	42% (31% to 54%)	19% (7% to 31%)	41% (33% to 50%)	49% (38% to 62%)	29% (16% to 42%)	13% (6% to 22%)		
	8V	54% (43% to 67%)	26% (12% to 43%)	49% (40% to 58%)	43% (31% to 56%)	41% (28% to 54%)	15% (8% to 24%)		
	8V-LV	26% (11% to 40%)*	24% (9% to 40%)*	13% (1% to 24%)*	4% (-10% to 20%)	0% (-13% to 16%)	6% (-3% to 16%)		
Mother heard about family planning in TV (last	LV	2% (0% to 6%)	10% (2% to 19%)	15% (10% to 21%)	34% (25% to 44%)	17% (9% to 28%)	5% (1% to 9%)	1	3
	MV	6% (1% to 11%)	14% (2% to 29%)	20% (13% to 28%)	40% (29% to 53%)	13% (3% to 23%)	6% (1% to 13%)		

months)	8V	8% (2% to 14%)	14% (5% to 26%)	24% (16% to 31%)	31% (21% to 44%)	16% (7% to 28%)	7% (2% to 14%)		
	8V-LV	6% (0% to 11%)*	5% (-7% to 19%)	8% (-1% to 17%)	-3% (-16% to 10%)	-1% (-12% to 10%)	2% (-3% to 9%)		
Mother read about family planning in newspaper (last months)	LV	0% (0% to 0%)	0% (0% to 0%)	3% (1% to 6%)	0% (0% to 0%)	9% (3% to 16%)	0% (0% to 0%)	4	4
	MV	1% (0% to 4%)	0% (0% to 2%)	1% (0% to 3%)	5% (1% to 12%)	9% (1% to 19%)	2% (0% to 7%)		
	8V	2% (0% to 7%)	5% (0% to 14%)	2% (0% to 5%)	3% (0% to 8%)	9% (1% to 16%)	2% (0% to 7%)		
	8V-LV	2% (0% to 7%)*	5% (0% to 14%)*	-1% (-5% to 3%)	3% (0% to 8%)*	-1% (-10% to 9%)	2% (0% to 7%)*		
Mother was told side-effects when getting contraceptives	LV	6% (1% to 11%)	10% (2% to 19%)	1% (0% to 3%)	9% (3% to 16%)	7% (3% to 14%)	21% (13% to 30%)	2	4
	MV	7% (2% to 14%)	10% (0% to 19%)	5% (1% to 9%)	16% (8% to 27%)	10% (3% to 17%)	40% (29% to 51%)		
	8V	11% (4% to 20%)	24% (12% to 40%)	4% (1% to 8%)	21% (13% to 32%)	14% (6% to 25%)	41% (30% to 53%)		
	8V-LV	6% (-3% to 16%)	14% (-2% to 33%)	3% (-1% to 7%)	13% (1% to 25%)*	6% (-3% to 17%)	21% (7% to 33%)*		
Mother's number of known contraceptive methods (out of 9)	LV	5.1 (4.6 to 5.5)	6.9 (6.4 to 7.4)	3.7 (3.3 to 4.1)	4.9 (4.4 to 5.4)	4.8 (4.3 to 5.4)	5.7 (5.3 to 6.1)	6	6
	MV	6.2 (5.8 to 6.6)	7.5 (7.0 to 8.0)	4.6 (4.2 to 5.0)	5.4 (4.8 to 5.9)	5.1 (4.6 to 5.5)	6.6 (6.2 to 6.9)		
	8V	6.6 (6.2 to 6.9)	7.8 (7.3 to 8.2)	4.9 (4.5 to 5.3)	5.8 (5.2 to 6.3)	5.6 (5.1 to 6.1)	6.6 (6.3 to 7.0)		
	8V-LV	1.5 (0.9 to 2.0)*	0.9 (0.1 to 1.5)*	1.1 (0.6 to 1.7)*	0.9 (0.2 to 1.7)*	0.7 (0.1 to 1.4)*	0.9 (0.5 to 1.4)*		
Mothers knows her ovulatory cycle	LV	46% (36% to 56%)	93% (86% to 100%)	53% (45% to 60%)	52% (42% to 64%)	75% (65% to 87%)	76% (67% to 84%)	4	3
	MV	64% (54% to 74%)	98% (90% to 100%)	74% (67% to 83%)	61% (49% to 73%)	80% (70% to 90%)	89% (79% to 95%)		
	8V	64% (54% to 76%)	98% (88% to 100%)	70% (62% to 78%)	71% (61% to 83%)	84% (74% to 93%)	89% (80% to 94%)		
	8V-LV	20% (4% to 33%)*	2% (-7% to 12%)	17% (6% to 28%)*	19% (5% to 34%)*	8% (-6% to 22%)	13% (0% to 23%)*		
9) Reproductive Health									
Mother had at least 1 antenatal visit during pregnancy	LV	7% (2% to 13%)	79% (67% to 90%)	63% (55% to 70%)	86% (78% to 94%)	77% (65% to 87%)	84% (75% to 91%)	4	4
	MV	26% (17% to 36%)	95% (88% to 100%)	83% (76% to 90%)	92% (86% to 97%)	87% (78% to 94%)	97% (91% to 100%)		
	8V	47% (34% to 57%)	90% (79% to 98%)	88% (81% to 93%)	94% (86% to 99%)	91% (84% to 97%)	95% (91% to 99%)		
	8V-LV	39% (26% to 50%)*	12% (-7% to 26%)	25% (15% to 35%)*	6% (-3% to 17%)	14% (1% to 28%)*	13% (3% to 22%)*		
Mother had blood pressure taken during pregnancy	LV	6% (2% to 11%)	67% (52% to 81%)	56% (48% to 64%)	86% (78% to 94%)	61% (48% to 72%)	75% (64% to 83%)	4	4
	MV	12% (6% to 20%)	81% (67% to 93%)	82% (76% to 89%)	92% (84% to 97%)	72% (61% to 84%)	92% (85% to 98%)		
	8V	24% (14% to 34%)	83% (69% to 95%)	88% (81% to 93%)	94% (86% to 99%)	81% (70% to 90%)	91% (84% to 97%)		
	8V-LV	19% (9% to 29%)*	17% (-2% to 36%)	31% (21% to 42%)*	6% (-1% to 17%)	20% (4% to 35%)*	17% (6% to 28%)*		

Mother had urine sample taken during pregnancy	LV	6% (1% to 10%)	60% (45% to 74%)	49% (40% to 57%)	75% (66% to 84%)	22% (13% to 32%)	45% (34% to 55%)	1	2
	MV	3% (0% to 8%)	62% (45% to 79%)	69% (61% to 77%)	87% (78% to 94%)	23% (13% to 35%)	57% (45% to 69%)		
	8V	8% (2% to 14%)	64% (48% to 81%)	72% (64% to 80%)	87% (79% to 95%)	20% (10% to 32%)	60% (49% to 70%)		
	8V-LV	2% (-4% to 9%)	5% (-19% to 26%)	24% (13% to 35%)*	12% (0% to 25%)	-1% (-14% to 12%)	14% (0% to 29%)		
Mother had blood sample taken during pregnancy	LV	4% (1% to 9%)	50% (33% to 64%)	30% (23% to 38%)	60% (48% to 70%)	25% (14% to 35%)	76% (67% to 84%)	3	3
	MV	2% (0% to 7%)	52% (36% to 69%)	47% (38% to 56%)	66% (56% to 78%)	33% (22% to 45%)	92% (85% to 98%)		
	8V	8% (2% to 14%)	60% (40% to 76%)	42% (33% to 50%)	77% (65% to 87%)	35% (23% to 48%)	92% (86% to 98%)		
	8V-LV	3% (-3% to 11%)	10% (-12% to 31%)	13% (0% to 24%)*	17% (3% to 32%)*	12% (-3% to 26%)	16% (7% to 28%)*		
Mother had blood or urine sample taken during pregnancy	LV	6% (1% to 10%)	62% (48% to 76%)	49% (40% to 57%)	81% (70% to 88%)	29% (17% to 39%)	76% (67% to 84%)	2	3
	MV	4% (1% to 10%)	67% (52% to 83%)	72% (64% to 80%)	88% (81% to 95%)	33% (23% to 46%)	93% (86% to 98%)		
	8V	9% (3% to 17%)	69% (50% to 83%)	74% (65% to 81%)	90% (82% to 96%)	36% (25% to 49%)	93% (87% to 99%)		
	8V-LV	3% (-3% to 11%)	7% (-17% to 26%)	25% (14% to 36%)*	10% (0% to 22%)	9% (-6% to 23%)	18% (8% to 29%)*		
Mother assisted during delivery by skilled provider	LV	6% (1% to 10%)	43% (29% to 57%)	30% (22% to 37%)	51% (39% to 61%)	28% (17% to 38%)	56% (46% to 67%)	1	4
	MV	2% (0% to 7%)	45% (31% to 62%)	38% (28% to 47%)	58% (47% to 70%)	35% (22% to 48%)	75% (63% to 84%)		
	8V	4% (1% to 10%)	57% (40% to 74%)	38% (28% to 47%)	61% (48% to 73%)	35% (22% to 46%)	79% (69% to 87%)		
	8V-LV	0% (-7% to 6%)	14% (-7% to 33%)	7% (-3% to 17%)	10% (-3% to 25%)	6% (-7% to 22%)	22% (9% to 34%)*		
Mother delivered at home	LV	91% (86% to 97%)	57% (43% to 74%)	53% (46% to 61%)	47% (36% to 58%)	70% (58% to 80%)	40% (29% to 49%)	3	5
	MV	98% (93% to 100%)	57% (40% to 71%)	46% (37% to 56%)	32% (22% to 44%)	62% (49% to 75%)	17% (10% to 28%)		
	8V	93% (87% to 98%)	40% (24% to 55%)	42% (33% to 51%)	29% (18% to 40%)	64% (51% to 77%)	15% (8% to 24%)		
	8V-LV	2% (-7% to 9%)	-19% (-38% to 2%)	-12% (-23% to -2%)*	-18% (-32% to -5%)*	-6% (-20% to 9%)	-24% (-37% to -13%)*		
Mother says money is a problem to access healthcare when sick	LV	94% (89% to 99%)	83% (71% to 95%)	67% (60% to 75%)	70% (60% to 79%)	83% (74% to 91%)	34% (25% to 45%)	1	3
	MV	84% (76% to 91%)	74% (62% to 90%)	61% (52% to 69%)	57% (44% to 69%)	69% (57% to 81%)	26% (16% to 37%)		
	8V	81% (71% to 89%)	69% (52% to 83%)	65% (57% to 74%)	65% (53% to 75%)	70% (57% to 81%)	26% (16% to 38%)		
	8V-LV	-13% (-24% to -4%)*	-14% (-33% to 5%)	-2% (-13% to 10%)	-5% (-21% to 9%)	-13% (-28% to 1%)	-7% (-22% to 6%)		
Mother says distance is a problem to access healthcare when sick	LV	80% (71% to 88%)	79% (64% to 90%)	45% (38% to 53%)	48% (36% to 60%)	65% (52% to 75%)	52% (40% to 62%)	1	2
	MV	67% (57% to 77%)	71% (57% to 86%)	46% (36% to 54%)	42% (30% to 55%)	59% (48% to 72%)	39% (28% to 52%)		
	8V	63% (50% to 73%)	64% (48% to 81%)	49% (40% to 58%)	40% (29% to 52%)	58% (43% to 70%)	39% (29% to 51%)		

	8V-LV	-17% (-29% to -4%)*	-14% (-33% to 7%)	3% (-7% to 15%)	-8% (-22% to 6%)	-6% (-23% to 9%)	-13% (-26% to 2%)		
Mother says getting permission to go is a problem to access healthcare when sick	LV	32% (22% to 42%)	45% (29% to 60%)	11% (6% to 16%)	16% (8% to 23%)	7% (1% to 14%)	15% (8% to 23%)	1	3
	MV	24% (16% to 34%)	38% (21% to 55%)	6% (2% to 11%)	21% (12% to 31%)	4% (0% to 10%)	5% (0% to 10%)		
	8V	22% (13% to 32%)	29% (14% to 48%)	8% (3% to 13%)	13% (5% to 22%)	4% (0% to 10%)	5% (1% to 10%)		
	8V-LV	-10% (-23% to 2%)	-17% (-38% to 7%)	-3% (-10% to 3%)	-3% (-13% to 9%)	-3% (-12% to 4%)	-10% (-20% to -1%)*		
10) Child health									
Mother knows Oral Rehydration Salts packets	LV	91% (84% to 96%)	98% (93% to 100%)	50% (42% to 58%)	48% (36% to 58%)	90% (83% to 97%)	97% (91% to 100%)	3	5
	MV	94% (88% to 99%)	100% (93% to 100%)	58% (49% to 66%)	65% (53% to 75%)	96% (91% to 100%)	98% (93% to 100%)		
	8V	99% (96% to 100%)	100% (98% to 100%)	68% (60% to 76%)	69% (56% to 79%)	96% (90% to 100%)	99% (95% to 100%)		
	8V-LV	8% (2% to 14%)*	2% (-2% to 7%)	18% (6% to 29%)*	21% (6% to 35%)*	6% (-3% to 13%)	2% (-2% to 8%)		
11) Nutrition of Children & Adults									
Mother ever breastfed her child	LV	100% (100% to 100%)	100% (100% to 100%)	94% (90% to 97%)	100% (96% to 100%)	100% (100% to 100%)	95% (90% to 99%)	5	2
	MV	100% (100% to 100%)	100% (100% to 100%)	99% (97% to 100%)	99% (95% to 100%)	100% (100% to 100%)	100% (97% to 100%)		
	8V	100% (99% to 100%)	100% (95% to 100%)	99% (96% to 100%)	100% (99% to 100%)	100% (99% to 100%)	100% (97% to 100%)		
	8V-LV	0% (-1% to 0%)*	0% (-5% to 0%)*	5% (0% to 9%)*	0% (-1% to 3%)	0% (-1% to 0%)*	3% (0% to 9%)*		
Mother breastfed her child the day it was born	LV	78% (69% to 86%)	76% (62% to 88%)	67% (59% to 74%)	91% (84% to 97%)	88% (81% to 96%)	83% (75% to 91%)	2	4
	MV	69% (58% to 79%)	81% (67% to 93%)	74% (66% to 82%)	91% (82% to 96%)	93% (84% to 99%)	95% (90% to 99%)		
	8V	78% (67% to 86%)	88% (76% to 98%)	83% (76% to 90%)	92% (84% to 97%)	91% (83% to 97%)	94% (88% to 99%)		
	8V-LV	0% (-12% to 11%)	12% (-5% to 29%)	17% (6% to 27%)*	1% (-8% to 9%)	1% (-9% to 12%)	11% (1% to 21%)*		
15) Women’s Empowerment									
Mother justifies being beaten for going out without permission	LV	14% (8% to 21%)	24% (10% to 36%)	60% (53% to 67%)	51% (39% to 61%)	80% (70% to 88%)	34% (25% to 45%)	0	0
	MV	14% (8% to 23%)	12% (2% to 24%)	58% (50% to 67%)	48% (36% to 62%)	81% (70% to 90%)	38% (26% to 49%)		
	8V	10% (4% to 18%)	12% (2% to 26%)	60% (52% to 69%)	43% (30% to 56%)	84% (74% to 93%)	31% (22% to 43%)		
	8V-LV	-4% (-13% to 7%)	-10% (-26% to 7%)	1% (-11% to 12%)	-6% (-23% to 10%)	4% (-7% to 19%)	-3% (-16% to 10%)		
Mother justifies being beaten for neglecting a child	LV	28% (20% to 38%)	24% (12% to 38%)	56% (48% to 63%)	47% (35% to 58%)	68% (57% to 78%)	39% (30% to 51%)	0	0
	MV	29% (19% to 38%)	29% (14% to 45%)	61% (52% to 69%)	51% (38% to 64%)	64% (52% to 77%)	37% (26% to 48%)		
	8V	21% (12% to 30%)	24% (12% to 38%)	59% (50% to 68%)	45% (32% to 57%)	67% (54% to 78%)	38% (29% to 48%)		
	8V-LV	-7% (-20% to 6%)	-2% (-19% to 19%)	3% (-8% to 15%)	-3% (-19% to 16%)	-1% (-17% to 14%)	-1% (-16% to 14%)		

Mother justifies being beaten for arguing with partner	LV	7% (2% to 12%)	12% (2% to 24%)	53% (45% to 61%)	51% (39% to 62%)	65% (54% to 75%)	44% (33% to 55%)	0	1
	MV	9% (3% to 17%)	14% (5% to 29%)	60% (51% to 69%)	51% (39% to 62%)	58% (45% to 71%)	40% (30% to 52%)		
	8V	4% (1% to 10%)	12% (2% to 24%)	60% (51% to 69%)	51% (38% to 61%)	58% (43% to 71%)	38% (28% to 48%)		
	8V-LV	-2% (-9% to 4%)	-2% (-14% to 12%)	7% (-6% to 19%)	-1% (-18% to 17%)	-7% (-26% to 10%)	-6% (-20% to 9%)		
Mother justifies being beaten for not having sex	LV	1% (0% to 4%)	2% (0% to 7%)	56% (47% to 63%)	49% (36% to 60%)	57% (43% to 68%)	36% (25% to 46%)	0	0
	MV	3% (0% to 9%)	7% (0% to 19%)	58% (49% to 67%)	57% (45% to 69%)	55% (43% to 68%)	40% (29% to 51%)		
	8V	2% (0% to 7%)	2% (0% to 12%)	58% (49% to 67%)	51% (38% to 62%)	51% (38% to 64%)	36% (25% to 45%)		
	8V-LV	1% (-2% to 6%)	0% (-7% to 10%)	3% (-9% to 15%)	1% (-17% to 18%)	-4% (-22% to 13%)	0% (-14% to 14%)		
Mother justifies being beaten for burning food	LV	3% (0% to 7%)	5% (0% to 12%)	29% (22% to 35%)	30% (19% to 40%)	62% (52% to 74%)	32% (23% to 43%)	0	2
	MV	6% (1% to 11%)	10% (2% to 21%)	30% (22% to 38%)	32% (22% to 45%)	51% (36% to 64%)	28% (17% to 38%)		
	8V	3% (0% to 8%)	2% (0% to 12%)	26% (19% to 35%)	31% (19% to 44%)	51% (38% to 64%)	28% (17% to 37%)		
	8V-LV	0% (-4% to 6%)	-2% (-12% to 7%)	-2% (-13% to 9%)	1% (-13% to 17%)	-13% (-30% to 6%)	-6% (-18% to 8%)		
Mother justifies being beaten	LV	30% (21% to 41%)	33% (19% to 48%)	70% (63% to 76%)	52% (40% to 64%)	87% (78% to 94%)	53% (43% to 63%)	0	0
	MV	31% (22% to 42%)	33% (19% to 50%)	74% (67% to 82%)	60% (48% to 71%)	88% (78% to 96%)	55% (43% to 66%)		
	8V	24% (16% to 34%)	29% (14% to 45%)	74% (67% to 82%)	56% (43% to 68%)	90% (81% to 97%)	52% (41% to 62%)		
	8V-LV	-6% (-20% to 8%)	-5% (-24% to 14%)	5% (-6% to 15%)	3% (-13% to 19%)	3% (-7% to 14%)	-1% (-15% to 14%)		
Mother decides on her own health	LV	20% (12% to 29%)	45% (31% to 60%)	19% (13% to 26%)	13% (5% to 20%)	62% (51% to 74%)	77% (68% to 85%)	0	2
	MV	28% (19% to 39%)	33% (19% to 52%)	22% (15% to 30%)	16% (8% to 26%)	52% (39% to 65%)	74% (64% to 83%)		
	8V	29% (19% to 40%)	45% (29% to 62%)	23% (15% to 31%)	18% (9% to 29%)	51% (36% to 65%)	85% (75% to 92%)		
	8V-LV	9% (-4% to 24%)	2% (-19% to 21%)	4% (-4% to 13%)	5% (-5% to 17%)	-13% (-30% to 4%)	8% (-3% to 20%)		
Mother decides on large household purchases	LV	28% (19% to 38%)	45% (29% to 60%)	21% (15% to 28%)	10% (4% to 18%)	54% (42% to 67%)	63% (52% to 74%)	0	0
	MV	28% (19% to 39%)	26% (12% to 45%)	23% (15% to 31%)	16% (8% to 26%)	43% (30% to 57%)	69% (57% to 78%)		
	8V	31% (22% to 42%)	38% (21% to 55%)	20% (13% to 28%)	16% (8% to 27%)	48% (33% to 64%)	72% (61% to 82%)		
	8V-LV	3% (-10% to 17%)	-5% (-26% to 14%)	-1% (-9% to 8%)	5% (-5% to 17%)	-6% (-23% to 10%)	9% (-5% to 22%)		
Mother decides on visits to family or relatives	LV	39% (29% to 48%)	55% (38% to 69%)	28% (22% to 36%)	9% (3% to 16%)	62% (51% to 74%)	74% (66% to 83%)	0	1
	MV	33% (23% to 44%)	29% (14% to 43%)	38% (29% to 47%)	14% (6% to 23%)	51% (38% to 64%)	74% (63% to 84%)		
	8V	40% (29% to 51%)	38% (21% to 57%)	31% (23% to 40%)	14% (6% to 25%)	55% (41% to 70%)	80% (70% to 90%)		

	8V-LV	2% (-11% to 16%)	-14% (-36% to 7%)	2% (-8% to 13%)	5% (-4% to 16%)	-6% (-23% to 12%)	7% (-6% to 20%)		
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Data sources: Various DHS [1].

Averages were calculated after controlling for the variables in Table 4, through optimal propensity scores matching to obtain a sample of 8V and MV children with similar characteristics to LV children (note LV set is unmodified).

[†] denotes DHS surveys where LV consists of one-year-old children with 0-2 vaccines and MV of 3-7 vaccines.

[‡] denotes DHS surveys where LV consists of one-year-old children with 0-4 vaccines and MV of 5-7 vaccines.

** denotes CIs not containing zero. Values correspond to the median of the averages of groups LV, MV, 8V, and 8V-LV differences. Value ranges in parenthesis correspond to the 95% CI obtained by a weighted bootstrap method of 1000 replications.*

References

- 1 DHS Program. Demographic and Health Surveys: Data, 2021. <https://www.dhsprogram.com/Data/> (accessed Sept 27, 2021).
- 2 Croft TN, Marshall AMJ, Allen CK, et al. Guide to DHS Statistics. Rockville, Maryland, USA: ICF 2018.