Appendix

Appendix A: Conceptualization of women empowerment status

Conceptualization of women empowerment

The measurement approaches of women's empowerment vary widely because of its multidimensional characteristics and country specific contextualization [1]. For this reason, different studies have used different indicators and developed models to measure women's empowerment, and yet none of these can be considered as a universal model [2]. According to Kishor (2000) [3], capturing the empowerment process with cross-sectional data requires indicators that evaluate the end product of the process (i.e., indicators that measure evidence of empowerment), as well as indicators of women's access to different sources of empowerment and of women's location within an appropriate setting for empowerment. Following this statement, evidence of empowerment could be sought out in terms of indicators that measure women's extrinsic and intrinsic control, i.e. women's participation in household decision making, as well as rejection of the gender-based subordination of women. Potential sources of empowerment are those that provide the building blocks for empowerment and access to resources, such as knowledge and employment for cash. And, indicators of the setting for empowerment refer to the circumstances of the respondent's current and past living arrangements and household structure, i.e. headship of the household. Together the indicators of evidence, sources, and setting provide a clear view of both the success and existence of the empowerment status of women within the household [3,4].

References

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Appendix Table 1: Determination of total sample size

Country, survey year	No. of Household interviewed	Total women (15-49 years)	Women with at least one birth in the last 3 or 5 years	Women with ANC history	Women with at least one ANC visit	Women receiving at least one ANC component	Missing information	Final sample size
South Asia (N = 48107)								
Afghanistan 2015	24395	29461	19642	19609	11755	10823	1855	8968
Bangladesh 2014	17300	17863	7004	4626	3630	3630	92	3538
India 2015-16	601509	699686	184641	184641	152638	152638	126312	26326
Nepal 2016	11040	12862	3998	3998	3762	3751	39	3712
Pakistan 2018	11869	12364	6711	6711	5866	5865	302	5563
Total	666113	772236	221996	219585	177651	176707	128600	**48107**

N, number of total women eligible for this study

Appendix Table 2: Country-specific skilled health care providers

Country	Specified skilled ANC providers
Afghanistan	Doctors, Nurses/midwives, and Auxiliary nurse/midwives
Bangladesh	Qualified doctor, Nurse/midwife/paramedic, Family Welfare Visitor (FWV), Community Skilled Birth Attendant (CSBA), and Medical Assistant or sub-assistant community medical officer (SACMO)
India	Doctor, Auxiliary nurse midwife, Nurse, Midwife, and Lady health visitor
Nepal	Doctor, nurse, and midwife
Pakistan	Doctor, Nurse/midwife/lady health visitor

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Appendix Table 3: Indicators and their related variables, questions as well as aggregate codes of variables used in describing women empowerment status (WES)

Indicators	Variables	Questions	Recode used for DHS response categories
Household decision making	Women's health	Person who usually decides on respondent's healthcare	Code = 1, if 'Respondent alone' = 0, if 'Respondent and husband/partner; or, Husband/partner alone; or, Someone else; or, Other'
	Large household purchases	Person who usually decides on large household purchases	
	Visiting relatives/family	Person who usually decides on visits to family or relatives	
Attitudes towards violence	Goes out without telling husband	Beating justified if wife goes out without telling husband	Code = 1, if 'No' = 0, if 'Yes; or, Don't know'
	Neglects children	Beating justified if wife neglects the children	
	Argues with husband	Beating justified if wife argues with husband	
	Refuses sex	Beating justified if wife refuses to have sex with husband	
	Burns food	Beating justified if wife burns the food	
Earning types	Earning types	Type of earnings from respondent's work	Code = 0, if 'Not paid; or, Not working' = 1, if 'In-kind only' = 2, if 'Cash and in-kind' = 3, if 'Cash only'
Educational level	Educational level of respondent	Highest educational level	Code = 0, if 'No education' = 1, if 'Primary' = 2, if 'Secondary' = 3, if 'Higher'
Headship of household	Household head	Relationship to household head	Code = 2, if 'head' = 0, if ' wife; or, daughter; or, daughter-in-law; or, granddaughter; or, mother; or, mother-in-law; or, sister; or any other relatives'

Appendix Table 4: Coverage of antenatal care (ANC) in South Asia

Country	Sample sizes	ANC visits with skilled providers	4 and more ANC visit	Received all ANC components	Adequate ANC
Afghanistan	8968	95.0 (93.7-96.1)	32.0 (29.5-34.6)	15.1 (13.2-17.3)	8.4 (7.1-9.9)
Bangladesh	3538	81.5 (77.3-85.1)	40.0 (37.3-42.8)	31.3 (29.0-33.7)	16.1 (14.1-18.4)
India	26326	95.7 (95.3-96.0)	64.7 (63.8-65.6)	50.8 (49.7-51.8)	37.8 (36.8-38.9)
Nepal	3712	89.1 (87.2-90.8)	73.7 (71.2-76.0)	49.3 (46.7-51.0)	39.8 (37.4-42.2)
Pakistan	5563	98.1 (97.4-98.6)	59.5 (56.5-62.5)	37.6 (34.8-40.5)	29.8 (27.2-32.5)
Pooled data	48107	94.3 (93.8-94.8)	56.9 (55.8-57.9)	41.1 (39.9-42.1)	30.0 (29.1-30.9)

Note: Coverage of antenatal care with 95% confidence intervel in parentheses

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Appendix Table 5: Association of women empowerment and socio-economic status with coverage of antenatal care in the pooled data [N = 48107]

Characteristics	Total N (%)	Adequate ANC (%) [95% CI]	Model 1 OR [95% CI]	Model 2 AOR [95% CI]
Women's empowerment and socio-economic status (WESES)				
Poor				
Low empowered	7270 (15.2)	17.2 (15.8-18.7)	1 (Ref.)	1 (Ref.)
Medium empowered	3795 (13.1)	18.6 (17.1-20.2)	1.07 (0.96-1.19)	1.07 (0.96-1.19)
Highly empowered	5634 (8.2)	23.3 (21.5-25.2)	1.50 (1.33-1.68)	1.33 (1.18-1.49)
Middle class				
Low empowered	6293 (7.9)	29.4 (27.2-31.6)	2.02 (1.79-2.28)	1.57 (1.38-1.77)
Medium empowered	3233 (6.7)	26.9 (24.7-29.2)	1.98 (1.75-2.24)	1.50 (1.32-1.70)
Highly empowered	6611 (6.2)	33.6 (30.8-36.5)	2.65 (2.35-3.00)	1.91 (1.69-2.17)
Rich				
Low empowered	3961 (11.7)	35.1 (32.8-37.5)	3.22 (2.88-3.60)	2.07 (1.84-2.32)
Medium empowered	2990 (13.7)	36.7 (34.0-39.4)	3.57 (3.21-3.96)	2.22 (1.99-2.49)
Highly empowered	8319 (17.3)	44.2 (42.2-46.3)	5.18 (4.68-5.72)	3.07 (2.75-3.43)
Respondent's age (in years)				
15-24	16852 (35.0)	30.2 (28.9-31.4)	-	1 (Ref.)
25-34	25307 (52.6)	37.7 (30.7-32.8)	-	1.06 (1.00-1.12)
35-49	5948 (12.4)	22.0 (20.1-24.2)	-	1.18 (1.07-1.30)
Number of living children				
1-3	37276 (77.5)	34.7 (33.8-35.7)	-	1.65 (1.52-1.79)
4 and more	10831 (22.5)	13.6 (12.5-14.8)	-	1 (Ref.)
Media exposure				
No	10779 (22.4)	14.7 (13.6-15.8)	-	1 (Ref.)
Yes	37328 (77.6)	34.4 (33.3-35.6)	-	1.69 (1.56-1.82)
Modern contraceptive used				
No	30250 (62.9)	27.8 (26.8-28.8)	-	1 (Ref.)
Yes	17857 (37.1)	33.7 (32.4-35.0)	-	1.23 (1.16-1.30)
Age at first birth				
≥18 years	39269 (81.6)	32.3 (31.3-33.3)	-	1.20 (1.11-1.30)
10–17 years	8838 (18.4)	19.6 (18.2-21.1)	-	1 (Ref.)

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Last pregnancy was wanted				
Unwanted	5557 (11.6)	20.3 (18.5-22.1)	-	1 (Ref.)
Wanted	42550 (88.5)	31.2 (30.3-32.2)	-	1.45 (1.33-1.58)
Husband's educational level				
No education	10484 (21.8)	13.9 (12.7-15.1)	-	1 (Ref.)
Primary	7780 (16.2)	23.3 (21.6-25.1)	-	1.17 (1.06-1.29)
Secondary and higher	29842 (62.0)	37.4 (36.4-38.4)	-	1.44 (1.32-1.56)
Place of residence				
Rural	31636 (65.8)	24.7 (23.7-25.8)	-	1 (Ref.)
Urban	16471 (34.2)	40.1 (38.5-41.7)	-	1.28 (1.18-1.39)
Random variance parameter: variance (SE)				
Community level			1.62 (0.06)	1.48 (0.06)
Country level			1.03 (0.65)	0.75 (0.47)

N, number of total respondents; CI, confidence intervals; OR, odds ratio; AOR, adjusted odds ratio, Ref., reference category; SE, standard error;

Model II was additionally adjusted by respondent's age, number of children, media exposure, modern contraceptive usage, age at birth, wanted last pregnancy, husband's educational level, and place of region;

Significance level: *p<0.05; **p<0.01; ***p<0.001;

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Appendix Table 6: Independent association of women empowerment with the coverage of antenatal care

Characteristics	Odds ratio (95% CI)
Women empowerment	
Low	1.00
Medium	1.13 (1.06-1.21)***
High	1.79 (1.68-1.91)***
Random variance parameter: variance (SE)	
Community level	1.91 (0.07)
Country level	0.96 (0.61)

Significance level: *p<0.05; **p<0.01; ***p<0.001

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Appendix Table 7: Independent association of socio-economic status (SES) with the coverage of antenatal care

Characteristics	Odds ratio (95% CI)
Socio-economic status	
Low	1.00
Medium	1.95 (1.81-2.10)***
High	3.60 (3.37-3.86)***
Random variance parameter: variance (SE)	
Community level	1.65 (0.07)
Country level	1.03 (0.66)

Significance level: *p<0.05; **p<0.01; ***p<0.001

Appendix Table 8: Level of significance of the differences between the odds ratios from different categories of women empowerment and socio-economic status (WESES)

Poor-low empowered (Ref.)	Poor-Medium empowered	Poor-Highly empowered	Middle class-Low empowered	Middle class-Medium empowered	Middle class-Highly empowered	Rich-Low empowered	Rich-Medium empowered	Rich-Highly empowered
Poor-Medium empowered	xx							
Poor-Highly empowered	0.000	xx						
Middle class-Low empowered	0.000	0.000	xx					
Middle class-Medium empowered	0.531	0.000	0.000	xx				
Middle class-Highly empowered	0.000	0.152	0.000	0.000	xx			
Rich-Low empowered	0.016	0.000	0.000	0.075	0.000	xx		
Rich-Medium empowered	0.003	0.222	0.000	0.000	0.011	0.000	xx	
Rich-Highly empowered	0.000	0.000	0.000	0.000	0.000	0.000	0.000	xx

Ref., reference category; xx, not applicable
Red color indicates statistically non-significant difference

Appendix Table 9: Association of women empowerment with coverage of ANC among the poor women (i.e. Sensitivity analysis)

Characteristics	Model I OR [95% CI]	Mode II AOR [95% CI]
Women empowerment level		
Low	1.00	1.00
Medium	1.04 (0.93-1.16)	1.04 (0.93-1.16)
High	1.53 (1.35-1.73)***	1.36 (1.20-1.54)***
Random variance parameter: variance (SE)		
Community level	1.93 (0.14)	1.59 (0.12)
Country level	1.08 (0.70)	0.79 (0.51)

Model II was additionally adjusted by respondent's age, number of children, media exposure, modern contraceptive usage, age at birth, wanted last pregnancy, husband's educational level, and place of region;

Significance level: *p<0.05; **p<0.01; ***p<0.001