Menstrual hygiene management among adolescent girls in India: a systematic review and Meta-Analysis

Supplement 1: Methodology and Quality assessment

Table S1.1: PICOT table PubMed

	Framework	Search terms	Number of articles
P	Population	(adolescent OR adolescence OR puberty OR peer OR school)	P: 3,922,974
	T	AND	1 20 000
1	Intervention or condition	AND	I: 20,899
		(Menstruation OR menstrual OR menses)	P+I: 16382
C	Control	<u>-</u>	
O	Outcome	AND (hygiene OR hygienically OR sanitation OR sanitary)	O: 112,907
			P+I+O: 397
T	Timing	AND ("2000/01/01"[PDat]: "2015/01/31"[PDat])	P+I+O+T: 32
\mathbf{S}	Setting	AND India	S: 252,289
			P+I+O+T+S: 24

Search date: 2 February 2015, 24 articles

Table S1.2: PICOT table Global Health Database

	Framework	Search terms	Number of articles
P	Population	(adolescent OR adolescence OR puberty OR peer OR school)	P: 374,759
I	Intervention or condition	AND (Menstruation OR menstrual OR menses)	I: 5912 P+I: 1447
\mathbf{C}	Control	-	
O	Outcome	AND	O: 295,839
		(hygiene OR hygienically OR sanitation OR sanitary)	P+I+O: 176
T	Timing	AND ("2000-2015")	Custom range
\mathbf{S}	Setting	AND India	S: 176,436
			P+I+O+T+S: 34

Search date 2 February 2015, 34 Articles

Google Scholar: Search date 2 February 2015, 21 Articles (sort by date) (Menstruation OR menstrual OR menses) AND (adolescent OR adolescence OR puberty OR peer OR school) AND (hygiene OR hygienically OR sanitation OR sanitary) AND India, custom range 2000-2015: > 20,000 results, screened pages until saturation (2 pages without new references). This occurred after 8 pages.

The search was repeated on 19 September 2015 for the year 2015, when 20 new references were added.

 $Table\ S1.3$: Elements of the data extraction form for the review on menstrual hygiene management among adolescent girls in India, studies published between 2000 and 2015

	Description	Notes
	Characteristics of material: first author, year, type of material (article, report)	
	Characteristics of study: design, sample size, location, study period, urban or rural, study	
	population, who administered questionnaire, time	
	Inclusion and exclusion criteria, sample size	
1	An indicator of age of the study population	Mean, sd, or median and IQR,
2	An indicator of SES, religion, maternal education or other	or range, or groups
3	An indicator of menarche	M110D
3	An indicator of menarche	Mean, sd, or median and IQR, or range, or groups
4	Menarche: Knowledge of menarche, source of information, reaction to menarche	
5	Material used for period: cloth, pads, both, how disposed, how cleaned, reuse, changing, how often, where	
6	Hygiene during period: baths, washing habits, soap use, frequency	
7	Restrictions during period: related to religion, touching, cooking, sitting or sleeping in house, getting out of the house, diet, physical activities, schooling/education, household work, family	
8	functions, type of clothing, interactions with boys, personal hygiene, other, none Knowledge about period: where does blood come from, is it normal, what is the reason for the	
0	period, what is the normal duration, etc	
9	Perception of period: debilitating, bothersome, or no negative effect on women's performance	
10	Menstrual problems: dysmenorrhoea (pain), irregular, other	
11	External problems: toilet situation at school or at home, school absenteeism, privacy, other	
12	Any associations reported	
13	Qualitative information	
14	Interventions described	
15	Boys and menstruation	
16	Any other issues	
17	Reference check	

Section S1.4: Additional information on data synthesis

A considerable proportion of studies did not report when the study was conducted. We calculated the median difference between publication and year of study for the studies where this was known (median was 2 years in 67 studies), and extrapolated this difference to 51 studies with unreported time of study. To assess time trends the year of study was recorded; for studies covering more than one year, the last year was used in order to be consistent with the studies where we extrapolated the period of study. Not all studies had information for all the components we examined in the framework, and some studies presented a wealth of information. We focussed on certain variables related to knowledge, attitude and practice, and sources of information with regards to menstrual hygiene, based on reliability, reporting frequency, and perceived importance by the review authors. The following outcomes were selected for further analysis based: awareness of menarche before the start of menstruation, and sources of the awareness; knowledge of source of bleeding, perception of menstruation as a normal phenomenon, resources for menstruation, type of absorbent used, disposal of absorbent, daily bath during period, restrictions reported, and school absenteeism during the menstruation.

For meta-regression, study-level predictors were considered for inclusion in the initial models if the p-value for the univariate association of that variable with the endpoint was <0.2. Backwards elimination was conducted whereby variables were removed if the p-value was >0.1 or all p-values for the individual levels were >0.1 in the multivariate model. We examined for interaction if there was more than one variable in the main model.

Section S1.5: Quality assessment

Quality-assessments of included studies were conducted by the same reviewers based on the following criteria: presence of a sample size calculation, randomness of sample, description and appropriateness of inclusion and exclusion criteria, presence of a description of the number of persons approached but not enrolled, or enrolled but data not used, completeness of outcome data for the number which was presented, presence of study characteristics and of multivariate analysis for the outcome of the paper. To score for randomness of sample, some description of the process was required. With regards to study characteristics, at least 3 of the four following components were expected to be present: year of conduct of the study, location of the study, an indicator of age of the participants, and another characteristic of the participants, such as socio-economic status, parental education, religion, or type of family (nuclear, extended or joint). A study did not receive a score of 1 for this item if two or more of these components were missing. A study was considered moderate-to-good, if at least 5 criteria had been satisfied.

Table S1.6: Summary of quality assessment of 138 included studies on MHM, India, 2000 to 2015

Variable	Values	Numbe	r (%)
Sample size calculation present	Yes	35	(25.4)
	No	102	(73.9)
	Not applicable	1	(0.7)
Random sample	Yes	40	(29.0)
	No	98	(71.0)
Inclusion and exclusion criteria described	Yes	62	(55.1)
and adequate	No	76	(55.1)
Denominator or refusals or incomplete	Yes	26	(18.8)
forms reported?	No	112	(81.2)
Complete outcome data	Yes	138	(100)
_	No	0	
Characteristics presented	Yes	96	(69.6)
	No	42	(30.4)
Multivariate analysis done	Yes	14	(10.1)
·	No	124	(90.0)
Quality	Score > 4	27	(19.6)
•	Score ≤4	111	(80.4)
Mean score (standard deviation)		3	(1.5)

Table~S1.7: Individual~quality~assessment~of~138~sources~included~in~the~review~of~the~status~of~menstrual~hygiene~management~among~adolescent~girls~in~India,~studies~published~between~2000~and~2015

management among	,	0						
Author/year, type of material	Sample size calculation present	Inclusion/exclu sion criteria described and adequate for study purpose	Random sample	Loss to enrolment or incomplete data described	Complete outcome data for included participants	Characteristics described (age, year of study, location)	Multivariate analysis conducted for study outcome	Assessment quality for review
Ade 2013 ¹	0	1	0	0	1	1	0	3
Amirtha 2013 ²	0	0	0	0	1	1	0	2
Anand 2015 ³	0	1	1	1	1	1	1	6
Anitha 2015 ⁴	0	0	0	0	1	0	0	1
Anuradha 2000 ⁵	1	1	1	0	1	1	1	6
Anusree 2014 ⁶	0	0	0	0	1	1	0	2
Arora 2013 ⁷	0	1	1	1	1	1	0	5
Arunmozhi 2013 ⁸	1	1	1	0	1	1	0	5
			0					
Audinarayana 2005 ⁹ Avachat 2011 ¹⁰	0	1		0	1	1	1	4
	0	0	0	0	1	1	0	2
Avasarala 2008 ¹¹	0	0	0	0	1	0	0	1
Balasubramanian 2005 ¹²	0	0	0	0	1	1	0	2
Barathalakshmi 2014 ¹³	1	1	0	0	1	1	0	4
Baridalyne 2004 ¹⁴	0	1	1	0	1	1	0	4
Bathija 2013 ¹⁵	0	1	0	0	1	1	0	3
Bhattacherjee 2013 ¹⁶	1	1	1	1	1	1	0	6
Bhore 2014 ¹⁷	0	0	0	0	1	1	0	2
Bhudhagaonkar 2014 ¹⁸	0	1	0	0	1	1	0	3
Bobhate 2011 ¹⁹	0	1	0	0	1	1	0	3
Bodat 2013 ²⁰	0	1	0	0	1	1	0	3
Boratne 2014 ²¹	1	1	0	1	1	1	0	5
Borker 2014 ²²	0	0	1	0	1	1	0	3
Chothe 2014 ²³		_		_				
	0	0	0	1	1	0	0	2
Dambhare 2012 ²⁴	0	1	0	1	1	1	0	4
Dasgupta 2008 ²⁵	0	0	0	0	1	1	0	2
Datta 2012 ²⁶	0	1	1	1	1	1	0	5
Deo 2007 ^{27 28}	0	1	0	0	1	0	0	2
Dhingra 2009 ²⁹	0	0	0	0	1	1	0	2
Dongre 2007 ³⁰	1	1	1	1	1	1	0	6
Dube 2012 ³¹	0	0	0	0	1	0	0	1
Dugani 2015 ³²	0	0	0	0	1	1	0	2
Dutta 2006 ³³	0	1	0	0	1	1	0	3
Garg 2001 ³⁴	0	0	0	1	1	1	0	3
Goel 2011 ³⁵	1	0	0	0	1	0	0	2
Gosavi 2015 ³⁶	0	0	0	0	1	1	0	2
Gujarathi 2014 ³⁷	0	0	0	0	1	0	0	1
Gupta 2001 ³⁸	0	0	0	0	1	1	0	2
Gupta 2006 ³⁹	0	0	0	1	1	1	0	3
Jain 2009 ⁴⁰		-					_	
	1	0	0	0	1	0	0	2
Jain 2012 ⁴¹	0	1	0	0	1	0	0	2
Jogdand 2011 ⁴²	0	1	1	0	1	0	0	3
Jothy 2012 ⁴³	0	0	0	0	1	1	0	2
Juyal 2013 ⁴⁴⁻⁴⁶	1	0	1	0	1	1	0	4
Jyothi 2005 ⁴⁷	0	0	1	0	1	0	0	2
Kale Kalpana 2014 ⁴⁸	0	1	0	1	1	0	0	3
Kamaljit 2012 ⁴⁹	0	0	0	0	1	1	0	2
Kamath 2013 ⁵⁰	1	0	1	0	1	1	0	4
Kanotra 2013 ⁵¹	0	0	0	0	1	0	0	1
Katiyar 2013 ⁵²	1	0	0	0	1	1	0	3
Katkuri 2014 ⁵³	0	0	0	0	1	1	0	2
Kavitha 2012 ⁵⁴	0	0	0	0	1	0	0	1
Kendre 2013 ⁵⁵	0	0	1	1	1	1	0	4
Khan 2012 ⁵⁶	0	1	1	0	1	1	0	4
Khanna 2005 ⁵⁷								
	0	0	1	1	1	1	1	5
Kumar 2011 ⁵⁸	0	0	0	0	1	0	0	1
Kumar 2012 ⁵⁹	1	1	0	1	1	1	0	5
								_
Kumar 2013 ⁶⁰	1	1	1	0	1	1	0	5
Kumar 2013 ⁶⁰ Kumar 2015 IJCRR ⁶¹		1 0	0	0	1 1	1	0	3
Kumar 2013 ⁶⁰	1							

Author/year, type of material	Sample size calculation present	Inclusion/exclu sion criteria described and adequate for study purpose	Random sample	Loss to enrolment or incomplete data described	Complete outcome data for included participants	Characteristics described (age, year of study, location)	Multivariate analysis conducted for study outcome	Assessment quality for review
Kushwah 2007 ⁶⁴	0	0	0	0	1	1	0	2
Lakshmi 2013 ⁶⁵	0	0	0	0	1	0	0	1
Lalbiaknungi 2015 ⁶⁶	0	1	0	0	1	1	0	3
Leuva 2014 ⁶⁷	0	1	0	0	1	1	0	3
Mahajan 2004 ⁶⁸	0	0	0	0	1	0	0	1
Malleshappa 2011 ⁶⁹	1	1	1	0	1	1	0	5
Manhas 2015 ⁷⁰	0	0	1	0	1	0	0	2
Manjula 2012 ⁷¹	1	0	1	0	1	0	0	3
Mehta 2013 ⁷²	0	0	0	0	1	1	0	2
Minhas 2014 ⁷³	0	1	0	0	1	0	0	2
Misra 2013 ⁷⁴	1	1	1	1	1	1	0	6
Mittal 2010 ⁷⁵	1	0	0	0	1	0	0	2
Mudey 2010 ⁷⁶	0	1	0	1	1	0	0	3
Nagamani 2014 ⁷⁷	0	1	0	0	1	1	0	3
Nagar 2010 ⁷⁸	0	0	1	0	1	1	0	3
Nair 2007 ⁷⁹	0	1	0	0	1	1	0	3
Nair 2012 ⁸⁰	0	1	1	0	1	0	0	3
Narayan 2001 ⁸¹	0	0	0	1	1	0	1	3
Nemade 2009 ⁸²	0	0	0	0	1	0	0	1
Nielsen 2012 Jaunpur ⁸³	1	1	1	0	1	1	0	5
Nielsen 2012 Mirzapur ⁸⁴	1	1	1	0	1	1	0	5
Nielsen 2012	1	1	1	0	1	1	0	5
Sonebhadra ⁸⁵ Nielsen 2013 East	1	1	1	0				
Singhbhum ⁸⁶	1	1	1	0	1	1	1	6
Nielsen 2013 Gumla ⁸⁷	1	1	1	0	1	1	1	6
Nielsen 2013 Nalanda ⁸⁸	1	1	1	0	1	1	1	6
Nielsen 2013 Vaishali ⁸⁹	1	1	1	0	1	1	1	6
Omidvar 2010 ⁹⁰	0	0	0	0	1	1	1	3
Omidvar 2011 ⁹¹	0	1	0	0	1	1	0	3
Padhy 2013 ⁹²	0	0	0	0	1	1	0	2
Pandit 2014 ⁹³	0	1	1	1	1	1	0	5
Parameaswari 2014 ⁹⁴	1	1	1	0	1	1	0	5
Paria 2014 ⁹⁵	0	1	0	0	1	1	0	3
Parwej 2005 ⁹⁶	1	0	1	0	1	1	1	5
Patavegar 2014 ⁹⁷	1	1	0	0	1	1	0	4
Pathak 2015 ⁹⁸	0	0	0	0	1	0	0	1
Patil 2013 ⁹⁹	0	1	0	0	1	0	0	2
Patle 2014 ¹⁰⁰	1	0	0	0	1	0	0	2
Pokhrel 2014 ¹⁰¹	0	1	0	1	1	1	0	4
Preeti 2015 ¹⁰²	0	0	0	0	1	1	0	2
Premila 2015 ¹⁰³	0	0	0	0	1	1	0	2
Prerana 2015 ¹⁰⁴	0	1	0	0	1	1	0	3
Puri 2006 ¹⁰⁵	0	0	1	0	1	0	0	2
Raddi 2010 ¹⁰⁶	0	0	0	0	1	1	0	2
Rana 2015 ¹⁰⁷	1	1	1	0	1	1	0	5
Rani 2014 ¹⁰⁸	0	0	0	0	1	1	1	3
Rao 2008 ¹⁰⁹	1	0	1	0	1	1	0	4
Ravishankar 2011 ¹¹⁰	0	0	0	0	1	1	0	2
Reddy 2005 ¹¹¹	0	0	0	0	1	1	0	2
Salve 2012 ¹¹²	0	0	0	0	1	0	0	1
Sanyal 2008 ¹¹³	0	1	0	0	1	1	1	4
Sarkar 2012 ¹¹⁴	0	1	0	1	1	1	0	4
Sekhon 2014 ¹¹⁵	0	0	0	0	1	1	0	2
Shah 2013 ¹¹⁶	0	1	1	1	1	1	0	5
Shamima 2013 ¹¹⁷	0	1	1	0	1	1	0	4
Shanbhag 2012 ¹¹⁸	0	1	0	0	1	1	0	3
Sharma 2008 ¹¹⁹	0	1	0	1	1	1	0	4
Shetty 2001 ¹²⁰	0	0	0	0	1	1	0	2
Shitole 2012 ¹²¹	0	0	0	0	1	0	0	1
Singh 2006 ¹²²	0	0	0	0	1	0	0	1
Singh 2006_IJCM ¹²³	0	0	0	0	1	0	0	1

Author/year, type of material	Sample size calculation present	Inclusion/exclu sion criteria described and adequate for study purpose	Random sample	Loss to enrolment or incomplete data described	Complete outcome data for included participants	Characteristics described (age, year of study, location)	Multivariate analysis conducted for study outcome	Assessment quality for review
Singh 2013 ¹²⁴	1	0	0	0	1	1	0	3
Singh 2015 ¹²⁵	0	0	0	0	1	1	0	2
Solanki 2012 ¹²⁶	0	0	0	0	1	0	0	1
Sudeshna 2012 ¹²⁷	1	1	1	1	1	1	1	7
Sumana 2015 ¹²⁸	0	0	0	0	1	0	0	1
Susila 2014 ¹²⁹	0	0	0	0	1	1	0	2
Susmitha 2010 ¹³⁰	0	1	0	1	1	1	0	4
Thakre 2011 ¹³¹	1	0	0	0	1	1	0	3
Thakur 2014 ¹³²	0	1	1	0	1	1	0	4
Tiwari 2006 ¹³³	0	0	0	0	1	0	0	1
Udgiri 2010 ¹³⁴	0	0	0	1	1	1	0	3
Unni 2010 ¹³⁵	0	0	0	0	1	0	0	1
Venkatesh 2011 ¹³⁶	0	0	0	0	1	0	0	1
Verma 2011 ¹³⁷	0	0	0	0	1	0	0	1
Verma 2013 ¹³⁸	0	0	0	0	1	1	0	2
Vidya 2013 ¹³⁹	1	1	0	1	1	1	0	5
Zaidi 2015 ¹⁴⁰	0	1	0	0	1	1	0	3
Zanvar 2007 ¹⁴¹	0	0	0	0	1	0	0	1

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Menstrual hygiene management among adolescent girls in India: a systematic review and Meta-Analysis

Supplement 2: Additional tables (subgroup analyses, meta-regression, and summary tables)

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Table S2·1: States where 138 studies were conducted, studies in India published between 2000 and 2015

States (in alphabetical	Number (%)				
order)					
Andhra Pradesh	8	(5.8)			
Arunachal Pradesh	0				
Assam	0				
Bihar	3	(2.2)			
Chhattisgarh	0				
Goa	0				
Gujarat	8	(5.8)			
Haryana	4	(2.9)			
Himachal Pradesh	0				
Jammu & Kashmir	4	(3.6)			
Jharkhand	3	(2.2)			
Karnataka	18	(13.0)			
Kerala	5	(3.6)			
Madhya Pradesh	3	(2.2)			
Maharashtra	24	(17.4)			
Manipur	0				
Meghalaya	1	(0.7)			
Mizoralam	0				
Nagaland	0				
New Delhi	6	(4.4)			
Orissa	1	(0.7)			
Puducherry	4	(2.9)			
Punjab	6	(4.4)			
Rajasthan	4	(2.9)			
Sikkim	0				
Tamil Nadu	10	(7.3)			
Telangana	3	(2.2)			
Tripura	0				
Uttar Pradesh	8	(5.8)			
Uttarakhand	2	(1.5)			
West Bengal	11	(8.0)			
National sample	1	(0.7)			

 $\it Table~S2\cdot 2$: Subgroup analysis and meta-regression of factors that may affect the prevalence of pre-menarche awareness, studies in India published between 2000 and 2015

	Univariate anal	lysis							
Covariate	Type of covariate	No. of Surveys	Pooled Prevalence, % and 95% CI	I ² , %	Odds ratio & 95% CI for meta- regression	p-value by level	$ au^2$	Variance explained (%)	p-value overall
No covariates		88	48, 43-53	98.6			0.354		
Recruitment of study	Community	29	38, 31-45	98.4	Reference		0.310	12.6	0.001
population	School	53	56, 49-62	98.4	1.52, 1.17-1.97	0.002			
	Other	6	34, 15-55	98.2	0.82, 0.50-1.35	0.426			
Setting of study	Rural	39	45, 38-51	98.0	Reference		0.339	4.2	0.088
	Urban	37	53, 44-62	98.9	1.15, 0.88-1.50	0.310			
	Slum	5	26, 20-33	88.0	0.65, 0.37-1.13	0.127			
	Combination	7	60, 52-68	96.0	1.48, 0.92-2.38	0.107			
Last year of study	Continuous	88			1.04, 1.01-1.07	0.012	0.333	6.2	0.012
	< 2010	32	47, 36-57	99.2	Reference		0.350	1.2	0.158
	≥2010	56	49, 44-54	97.7	1.21, 0.93-1.57	0.158			
Region of study	North	20	39, 28-51	98.7	1.00 Reference		0.333	6.1	0.057
,	Central	7	50, 28-73	99.5	1.43, 0.86-2.37	0.165			
	East	15	49, 41-58	97.4	1.51, 1.01-2.24	0.042			
	West	19	61, 49-73	98.6	1.74, 1.20-2.52	0.004			
	South	27	45, 38-52	97.4	1.31, 0.93-1.85	0.115			
Completely or partly	Completely	79	48, 43-54	98.7	0.95, 0.62-1.45	0.809	0.358	0.0	0.809
adolescents	Partly	9	50, 36-64	98.0	Reference				
Self-administered or	Self	41	53, 44-61	98.7	1.21, 0.94-1.55	0.146	0.350	1.3	0.146
interview	Interviewed	37	45, 38-53	98.6	Reference				
Quality score	Continuous	88	,		0.92, 0.85-1.00	0.049	0.342	3.4	0.049
Ç ,	>4	19	39, 29-49	98.9	0.71, 0.53-0.96	0.029	0.339	4.4	0.029
	≤4	69	51, 45-57	98.4	Reference				
Study is a random	Yes	29	42, 34-50	98.6	0.78, 0.60-1.02	0.073	0.345	2.6	0.073
sample	No	59	52, 45-58	98.5	Reference			_ ~	
<u> </u>	Multivariate an						0.271	23.6	0.0004
Setting of study	Rural	39			Reference				
	Urban	37			1.12, 0.87-1.45	0.369			
	Slum	5			0.59, 0.36-0.98	0.043			
	Combination	7			1.57, 1.00-2.46	0.049			
Region of study	North	18			Reference				
11081011 01 01444	Central	7			1.56, 0.97-2.52	0.068			
	East	14			1.72, 1.13-2.60	0.012			
	West	17			1.55, 1.10-2.19	0.013			
	South	22			1.25, 0.89-1.73	0.190			
Quality score	>4	19			0.65, 0.47-0.89	0.008			
Quality Score	≤4	59			1.00	0 000			
Last year of study	Continuous	<u>88</u>			1.03, 1.00-1.06	0.026			
Last year or stady	Commuous	00			1 03, 1.00-1.00	0.020			

Table $S2\cdot3$: Summary of results of subgroup analysis and meta-regression of other outcomes than awareness in table 2 main manuscript, India, studies published between 2000-2015

Outcome	Total #	Subgroup analysis regression	for variab	oles presented in meta-	Multivariate meta-regression (if applicable)*		
Information source on mena	arche	Variable	#	Pooled prevalence,	Odds ratio,	p-value	
among girls aware of menai	43	Region		%, 95% CI	95% CI		
Mother	43	North India	0	27 24 52	Reference		
			9	37, 24-52		0.226	
		Central	1	67, 59-74	1.59, 0.73-3.46	0.236	
		East	8	59, 50-68	1.45, 0.98-2.13	0.062	
		West	14	52, 43-60	1.25, 0.89-1.75	0.192	
		South	11	59, 50-67	1.40, 0.97, 2.01	0.071	
		Year of study			1.04, 1.00-1.07	0.028	
		Random sample					
		Yes	11	41, 33-50	0.75, 0.57-1.00	0.047	
		No	32	56, 50-62	Reference		
Friends	37	Region					
		North India	11	34, 26-42	Reference		
		Central	1	9, 5-15	0.31, 0.10-0.95	0.041	
		East	4	48, 40-56	1.52, 0.80-2.87	0.191	
		West	12	19, 13-27	0.58, 0.37-0.91	0.020	
		South	8	23, 15-32	0.69, 0.42-1.12	0.020	
Polotivo	22		O	4J, 1J-J4	0.03, 0.42-1.17	0.170	
Relative	32	Region	10	20, 25, 22	D - f		
		North India	10	28, 25-32	Reference	0.140	
		Central	1	11, 6-17	0.38, 0.10-1.45	0.149	
		East	3	5, 2-10	0.17, 0.07-0.39	<0.0001	
		West	10	19, 15-24	0.63, 0.35-1.12	0.112	
		South	8	11, 6-16	0.31, 0.17-0.56	< 0.0001	
Teacher	25	Recruitment					
		Community	7	19, 11-30	Reference		
		School	18	9, 5-15	0.40, 0.17-0.94	0.037	
Media	17	Region		7,0 -0	,		
Wiedla	17	North India	6	25, 13-38	Reference		
		Central	0	23, 13-36	Reference		
			2	12 1 24	0.47.0.15.1.50	0.105	
		East		12, 1-34	0.47, 0.15-1.50	0.185	
		West	5	4, 2-7	0.18, 0.08-0.43	0.001	
		South	4	21, 11-33	0.89, 0.36-2.22	0.790	
Health worker	4				No significant variabl	es	
Knowledge on menstruation	ı and per	ception					
Uterus is source of bleeding	43				No significant variabl	es	
Menstruation is a normal	54	Recruitment					
phenomena		Community	10	42, 22-64	Reference		
•		School	40	61, 52-69	1.16, 0.73-1.84	0.528	
		Other	4	28, 6-58	0.54, 0.27-1.10	0.089	
		Adolescents	-	~, ~ ~ ~	,/ - 10		
		Completely	51	57, 49-65	2.83, 1.29-6.23	0.010	
			3	,	Reference	0.010	
		Partly	J	21, 2-52		0.046	
D		Year of study			1.04, 1.00-1.08	0.046	
Resources on menstruation	4.1	articipants			NT 1 101 . 111		
Mother	41				No significant variabl		
Friend	35				No significant variabl		
Relative	31	Quality score	31		1.44, 1.15-1.80	0.003	
		Adolescents					
		Completely	28	15, 11-20	5.08, 1.82-14.14	0.003	
		Partly	3	7, 0-25	Reference		
		Year of study		· · · · · · · · · · · · · · · · · · ·	1.23, 1.09-1.39	0.002	
Teacher	23				1.75, 1.16-2.63	0.022	
	23						
Teacher Media	23 24	Quality score			1.75, 1.10-2.05	0.022	
		Quality score Setting	11	7.2.11		0.022	
		Quality score Setting Rural	11	7, 3-11	Reference		
		Quality score Setting Rural Urban	10	14, 7-22	Reference 2·42, 0·97-6·07	0.038	
		Quality score Setting Rural Urban Slum	10 1	14, 7-22 33, 30-37	Reference 2·42, 0·97-6·07 0·65, 0·05-8·92	0·038 0·610	
		Quality score Setting Rural Urban	10	14, 7-22	Reference 2·42, 0·97-6·07	0.038	
		Quality score Setting Rural Urban Slum	10 1	14, 7-22 33, 30-37	Reference 2·42, 0·97-6·07 0·65, 0·05-8·92	0·038 0·610	
		Quality score Setting Rural Urban Slum Combination	10 1	14, 7-22 33, 30-37	Reference 2·42, 0·97-6·07 0·65, 0·05-8·92	0·038 0·610	
		Quality score Setting Rural Urban Slum Combination Data collection	10 1 2	14, 7-22 33, 30-37 8, 0-30	Reference 2·42, 0·97-6·07 0·65, 0·05-8·92 2·61, 0·48-14·06	0·038 0·610 0·248	

Abbreviations: CI: confidence interval

^{*}Only factors with a p-value < 0.1 for one or more levels in multivariate analysis are presented in this table.

Table S2·4: Subgroup analysis and meta-regression of factors that may affect the use of commercial pads among adolescents, studies in India published between 2000 and 2015

	Univariate analysis								
Covariate	Type of covariate	#*	Pooled Prevalence %	I ² , %	Odds ratio 95% CI for meta- regression	p-value by level	$ au^2$	Variance explained (%)	p-value overall
No covariates		104	46, 39-52	99.6			1.021		
Recruitment of study	Community	37	35, 27-43	98.7	1.00 Reference		0.973	4.7	0.035
population	School	62	52, 44-61	99.3	1.71, 1.14-2.57	0.010			
	Other	5	39, 13-70	99.2	1.21, 0.48-3.09	0.686			
Setting of study	Rural	56	32, 25-38	98.6	1.00		0.879	13.9	0.0005
	Urban	38	67, 57-76	99.3	2.31, 1.56-3.42	< 0.001			
	Slum	9	43, 20-67	99.2	1.00, 0.51-1.96	0.996			
	Combination	1	63, 52-73		2.61, 0.39-17.30	0.316			
Last year of study	Continuous	104			1.13, 1.07-1.18	< 0.0001	0.850	16.7	< 0.0001
	< 2010	26	28, 19-38	98.5	1.00		0.944	7.5	0.003
	≥2010	78	52, 44-59	99.3	1.95, 1.26-3.03	0.003			
Region of study	North	19	43, 25-62	99.6	1.00		1.028	0.0	0.520
	Central	5	26, 12-44	98.7	0.73, 0.26-2.00	0.531			
	East	19	44, 31-57	99.1	1.10, 0.57-2.12	0.772			
	West	29	43, 31-55	98.9	0.94, 0.52 - 1.71	0.842			
	South	32	54, 43-65	99.2	1.38, 0.77-2.47	0.278			
Completely or partly	Completely	94	48, 41-55	99.3	1.49, 0.77-2.91	0.238	1.016	0.4	0.238
adolescents	Partly	10	28, 18-39	97.5	1.00				
Self-administered or	Self	50	51, 42-59	99.0	1.41, 0.95-2.08	0.085	1.001	1.9	0.085
interview	Interviewed	54	41, 32-51	99.4	1.00				
Quality score	Continuous				0.86, 0.76-0.98	0.027	0.982	3.8	0.027
•	>4	26	30, 20-40	99.3	0.52, 0.33-0.80	0.003	0.946	7.3	0.003
	≤4	78	51, 44-59	99.1	1.00				
Study is a random	Yes	36	39, 30-48	99.2	0.74, 0.49-1.11	0.142	1.009	1.1	0.142
sample	No	68	49, 40-58	99.3	1.00				
•	Multivariate analys	is					0.665	34.8	<0.0001
Setting of study	Rural	56			1.00				
• •	Urban	38			$2 \cdot 14, 1 \cdot 50 - 3 \cdot 04$	< 0.0001			
	Slum	9			0.92, 0.51-1.66	0.778			
	Combination	1			3.95, 0.74-20.93	0.106			
Year of study	Continuous	104			1.12, 1.07-1.17	<0.0001			
Quality score	>4	26			0.64, 0.43-0.94	0.024			
- •	≤4	78			1.00				

^{*}One study (Anand et al 2015) excluded; this study is from a large national sample and inclusion distorted the meta-analyses¹

Table S2.5: Summary of results of subgroup analysis and meta-regression of other outcomes for table 3

Outcome	Total #	Subgroup analysis meta-regression	s for varia	Multivariate meta-regression (if applicable)*		
Absorbents used	#	Variable	# PP, %, 95% (Odds ratio, 95% CI	P
Cloths	101	Setting		, , , , , , , , , ,		
		Rural	55	63, 56-70	Reference	
		Urban	35	27, 18-37	0.39, 0.25-0.60	< 0.0001
		Slum	8	61, 35-83	0.74, 0.34-1.60	0.437
		Combination	3	71, 17-100	0.80, 0.26-2.46	0.689
		Recruitment				
		Community	38	68, 59-76	Reference	
		School	57	37, 29-45	0.56, 0.36-0.85	0.007
		Other	6	63, 36-86	0.94, 0.39-2.28	0.895
Pads and cloths	42	Recruitment				
		Community	15	6, 2-11	Reference	-0.0001
		School	26	18, 13-24	3.66, 1.95-6.84	<0.0001
		Other	1	15, 11-21	3.99, 0.54-29.31	0.168
Cottons/home-made	12	Year of study	12		0.93, 0.86-1.00 1.17, 1.05-1.31	0.059
disposable items	12	Year of study	12		1.17, 1.03-1.31	0.009
Disposal of absorbent						
Routine waste/dustbin	44	Setting				
resume music/dustom	77	Rural	25	28, 19-38	Reference	
		Urban	16	70, 60-79	3.14, 1.84-5.36	<0.0001
		Slum	3	51, 47-55	2.50, 0.90-6.95	0.078
"Throw away"	34	Recruitment	-	, 20	,	
- · · - · - · · · · · · · · · · · · · ·		Community	14	35, 24-46	Reference	
		School	17	16, 8-26	0.32, 0.17-0.60	0.001
		Other	2	13, 10-16	0.26, 0.07-1.03	0.055
		Random sample		,	•	
		Yes	15	17, 9-28	0.35, 0.19-0.67	0.002
		No	19	28, 20-37	Reference	
Burning	31	Quality score				
		>4	10	3, 0-7	0.10, 0.03-00.38	0.001
		≤4	21	28, 15-43	Reference	
Burying	24	Recruitment				
		Community	10	46, 34-57	Reference	
		School	13	14, 9-20	0.39, 0.22-0.70	0.003
		Other	1	4, 2-6	0.06, 0.02-0.21	<0.0001
		Quality score			1.19, 1.08-1.31	0.002
		Year of study			1.18, 1.01-1.38	0.041
In toilet	17	Region	2	2.0.7	D -f	
		North India	3	2, 0-7	Reference	
		Central	0	2 1 6	2 01 0 55 14 42	0.102
		East	3	3, 1-6	2.81, 0.55-14.43	0.193
		West South	4 7	5, 0-13	4.82, 0.94-24.75	0.058
		South Recruitment	/	17, 6-31	7.44, 1.94-28.58	0.007
		~ .	2	28, 0-90	Reference	
		Community School	2 14	28, 0-90 7, 4-11	0.26, 0.06-1.21	0.080
		Other	1	0, 0-2	0.02, 0.00-0.29	0.000
Hygiene		Julion	-	0, 0 2	0 02, 0 00 0 27	0 000
Daily bath	39	Setting				
√ • • • • •		Rural	24	86, 76-93	Reference	
		Urban	12	92, 86-97	1.34, 0.80-2.26	0.261
		Slum	1	15, 13-18	0.19, 0.05-0.81	0.026
		Combined	2	33, 0-100	0.22, 0.08-0.61	0.005
		Region			,	
		North India	8	67, 35-92	Reference	
		Central	4	93, 91-95	2.33, 0.98-5.52	0.055
		East	10	84, 61-98	1.95, 0.99-3.83	0.052
		West	4	94, 79-100	1.69. 0.72-3.97	0.220
		South	13	87, 76-95	2.04, 1.11-3.75	0.023

^{*}Only factors with a p-value < 0.1 for any level are presented in this table

Table S2·6: Quotes and data related to choice of cloths or pads in India, from studies on menstrual hygiene management among adolescent girls, published between 2000 and 2015

Publication (1 st author and year)	State	Setting	Descriptions or data							
Amirtha 2013 ²	Pondicherry	Urban		elt needs of the g			ring menstruation, 88% girls said ts (39·5%) and provision of low-cost			
Baridalyne 2004 ³	New Delhi	Urban	Use of sanitary napkins associator 60.5% among daughters of among daughters of illiterate n	Use of sanitary napkins associated with literacy of the mother (46/76 or 60.5% among daughters of literate mothers vs. $26/178$ or 14.6% among daughters of illiterate mothers, risk ratio 4.1 , 95% CI $2.8-6.2$, p<0.001)						
Bathija 2013 ⁴	Karnataka	Urban	Reasons not using pads (n=79) -Feel comfortable with cloth 80% -Not willing to use 1% -Costly 18% -Out of tradition 1%							
Boratne 2014 ⁵	Pondicherry	Urban and rural	"Most of the girls agreed to usefulness of sanitary pads during menses as it absorbs heavy flow, but few are concerned about its chemical smell/cost/non-availability at local shops and find difficulties to pay for transport. They also expect to get training which will make them understand the proper method of using sanitary pads."							
Borker 2014 ⁶	Kerala	Rural	"Further probing questions ind regarding the method of its dis			aware	Ideal absorbent: napkin: 90/217 (41·5%), cloth 127/217 (58·5%) Main reason not using napkin: Economic reason: 40/114 (35%) Not aware of it: 33/114 (29%) Don't like it: 33/114 (29%)			
Datta 2012 ⁷	West Bengal	Urban	Pros and contras of napkin	_			<u> </u>			
		and	Titled also decided	Urban, %, (n=		Rural, % (r	<u>n=87)</u>			
		rural	Ideal absorbent Comfortable	95·6 55·9		92·0 36·8				
			Adequate absorption	29.4		58·6				
			Does not stain clothes	36.8		16·1				
			Does not itch	10.3		3.4				
			Expensive	41.2		49·4				
			Not everywhere available	26.5		8.0				
8	Rajasthan	Urban	"The main reason for using ho	me-made napkin			0			
Dube 2012 ⁸	Kajastnan	and	buy costly readymade napkins.	."						
Dube 2012 ° Gupta 2001 ⁹	Rajasthan		"All four fathers, with whom v paying for the sanitary napkins	we succeeded in l s used by their da	aughters. (One of the	nought that their role was limited to meven suggested that some research but expensive sanitary napkins."			
	,	and rural	"All four fathers, with whom v paying for the sanitary napkins should be done on finding chea "Majority of respondent (87%)	ve succeeded in l s used by their da aper substitutes f	aughters. (for these re	One of thereadymade	m even suggested that some research but expensive sanitary napkins."			
Gupta 2001 ⁹	Rajasthan	and rural Urban	"All four fathers, with whom v paying for the sanitary napkins should be done on finding chee "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3%	we succeeded in last used by their dataper substitutes for the prevention of the substitutes for the substitute	aughters. (for these re	One of thereadymade	m even suggested that some research but expensive sanitary napkins."			
Gupta 2001 ⁹ Jain 2012 ¹⁰	Rajasthan Rajasthan	and rural Urban Rural	"All four fathers, with whom v paying for the sanitary napkins should be done on finding cher "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7%	we succeeded in Is used by their dataper substitutes for the prevented that the state of the substitutes for the substitutes for the substitutes for the substitute f	aughters. (for these reperted)	One of their eadymade afford sanit	m even suggested that some research but expensive sanitary napkins."			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹	Rajasthan Rajasthan Tamil Nadu	and rural Urban Rural Urban Urban and	"All four fathers, with whom v paying for the sanitary napkins should be done on finding chea "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (de	we succeeded in Is used by their dataper substitutes for the prevention of the provided HTML with the provided HTML representation of the	reported)	One of their eadymade afford sanit	m even suggested that some research but expensive sanitary napkins."			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹	Rajasthan Rajasthan Tamil Nadu	and rural Urban Rural Rural	"All four fathers, with whom we paying for the sanitary napkins should be done on finding cheat "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (defined the same pads)	we succeeded in Is used by their dataper substitutes for the prevention of the substitutes for the substitutes for the substitutes for the substitutes for the substitute for the substi	reported) Rural, % 55.6	One of their eadymade afford sanit	m even suggested that some research but expensive sanitary napkins."			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹	Rajasthan Rajasthan Tamil Nadu	and rural Urban Rural Urban Urban and	"All four fathers, with whom we paying for the sanitary napkins should be done on finding cheat "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (definition of the page	ve succeeded in Is used by their dataper substitutes for the prevention of the provided in Issuer (a) revealed that the provided in Issuer (b) revealed the provided in Issuer (b) revealed that the prov	reported) Rural, % 55.6 30.8	One of their eadymade afford sanit	m even suggested that some research but expensive sanitary napkins."			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹²	Rajasthan Rajasthan Tamil Nadu Karnataka	and rural Urban Rural Urban Urban and rural	"All four fathers, with whom we paying for the sanitary napkins should be done on finding cheat "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (deal of the costs of pads) Difficult to dispose High costs of pads No knowledge about it	ve succeeded in Is used by their dataper substitutes for revealed that the substitutes for revealed the substitu	reported) Rural, % 55.6 30.8 23.1	One of their readymade afford sanit	m even suggested that some research but expensive sanitary napkins." ary napkin."			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹	Rajasthan Rajasthan Tamil Nadu	and rural Urban Rural Urban Urban and	"All four fathers, with whom we paying for the sanitary napkins should be done on finding cheat "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (definition of the part	enominators not r Urban, % 55-6 0 11-1 eported that they	reported) Rural, % 55.6 30.8 23.1 use sanita	One of their readymade afford sanit	m even suggested that some research but expensive sanitary napkins."			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹²	Rajasthan Rajasthan Tamil Nadu Karnataka	and rural Urban Rural Urban Urban and rural	"All four fathers, with whom we paying for the sanitary napkins should be done on finding cheat "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (deal of the costs of pads) No knowledge about it "The girls from rich families re not use sanitary napkins becau	enominators not r Urban, % 55-6 0 11-1 eported that they	reported) Rural, % 55.6 30.8 23.1 ruse sanita	One of their readymade afford sanit	m even suggested that some research but expensive sanitary napkins." ary napkin."			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹²	Rajasthan Rajasthan Tamil Nadu Karnataka	and rural Urban Rural Urban Urban and rural Urban	"All four fathers, with whom v paying for the sanitary napkins should be done on finding che: "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (de Difficult to dispose High costs of pads No knowledge about it "The girls from rich families re not use sanitary napkins becaubathrooms."	enominators not r Urban, % 55-6 0 11-1 eported that they	reported) Rural, % 55.6 30.8 23.1 ruse sanita problems.	One of their eadymade afford sanit	m even suggested that some research but expensive sanitary napkins." ary napkin." s whereas the girls from urban slum do reported having less access to private t using pads: owledge: 30.3% 30.9%			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹²	Rajasthan Rajasthan Tamil Nadu Karnataka	and rural Urban Rural Urban urban urban urban urban urban and	"All four fathers, with whom v paying for the sanitary napkins should be done on finding che: "Majority of respondent (87%) (N=161) Reasons not using pads (n=226-Don't know 10·2%-Not easily available 33·6%-Difficulty of disposal 25·7%-High costs 47·3%-Not knowing about it 54·9%-Reasons for not using pads (de Difficult to dispose High costs of pads No knowledge about it "The girls from rich families re not use sanitary napkins becaubathrooms."	enominators not r Urban, % 55.6 0 11.1 eported that they se of monetary p	reported) Rural, % 55.6 30.8 23.1 use sanita problems. T	One of their eadymade afford sanit was any napking. They also be ack of known ack o	s whereas the girls from urban slum do reported having less access to private t using pads: oveledge: 30·3% 30·9% ity and shyness (no data) using cloths,% (n=582) able 49·7 e 23·7 apkins 7·9 apkins 7·9 apkins 2·9 ed 2·6 11·5			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹² Kumar 2011 ¹³ Leuva 2014 ¹⁴ Misra 2013 ¹⁵	Rajasthan Rajasthan Tamil Nadu Karnataka Jharkand Gujarat Haryana	and rural Urban Rural Urban Urban and rural Urban Arural Urban Rural Rural	"All four fathers, with whom v paying for the sanitary napkins should be done on finding chee "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (de Difficult to dispose High costs of pads No knowledge about it "The girls from rich families re not use sanitary napkins becaubathrooms." 98/256 used pads 147/256 preferred pads Reason s for using pads,% (n=Safe and easy 77·0 Get stains with cloths 13·6 Cannot get cloth at home 3·1 Absorbs well 2·8 Easily accessible 2·1 Used to it 1·4	enominators not recommend that they seed that they	reported) Rural, % 55.6 30.8 23.1 use sanita roblems.	One of their eadymade afford sanit was any napking. They also be ack of known ack o	s whereas the girls from urban slum do reported having less access to private t using pads: owledge: 30.3% 30.9% ity and shyness (no data) using cloths,% (n=582) able 49.7 e 23.7 appkins 7.9 appkins 7.9 appkins 2.9			
Gupta 20019 Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹² Kumar 2011 ¹³ Leuva 2014 ¹⁴ Misra 2013 ¹⁵	Rajasthan Rajasthan Tamil Nadu Karnataka Jharkand Gujarat	and rural Urban Rural Urban Urban and rural Urban and rural	"All four fathers, with whom v paying for the sanitary napkins should be done on finding chee "Majority of respondent (87%) (N=161) Reasons not using pads (n=226-200't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (de Difficult to dispose High costs of pads No knowledge about it "The girls from rich families re not use sanitary napkins becaubathrooms." 98/256 used pads 147/256 preferred pads Reason s for using pads,% (n=Safe and easy 77·0 Get stains with cloths 13·6 Cannot get cloth at home 3·1 Absorbs well 2·8 Easily accessible 2·1 Used to it 1·4	enominators not recommendation of the state	reported) Rural, % 55.6 30.8 23.1 use sanita roblems.	One of their eadymade afford sanit was any napking. They also be ack of known ack o	s whereas the girls from urban slum do reported having less access to private t using pads: oveledge: 30·3% 30·9% ity and shyness (no data) using cloths,% (n=582) able 49·7 e 23·7 apkins 7·9 apkins 7·9 apkins 2·9 ed 2·6 11·5			
Gupta 2001 ⁹ Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹² Kumar 2011 ¹³ Leuva 2014 ¹⁴ Misra 2013 ¹⁵	Rajasthan Rajasthan Tamil Nadu Karnataka Jharkand Gujarat Haryana	and rural Urban Rural Urban Urban and rural Urban Arural Urban Rural Rural	"All four fathers, with whom we paying for the sanitary napkins should be done on finding cheet "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (de Difficult to dispose High costs of pads No knowledge about it "The girls from rich families re not use sanitary napkins becaubathrooms." 98/256 used pads 147/256 preferred pads Reason s for using pads,% (n=Safe and easy 77·0) Get stains with cloths 13·6 Cannot get cloth at home 3·1 Absorbs well 2·8 Easily accessible 2·1 Used to it 1·4 Reason for cloth as menstrual a Economical	enominators not respectively.	reported) Rural, % 55.6 30.8 23.1 use sanita roblems.	One of their eadymade afford sanit was any napking. They also be ack of known ack o	s whereas the girls from urban slum do reported having less access to private t using pads: oveledge: 30·3% 30·9% ity and shyness (no data) using cloths,% (n=582) able 49·7 e 23·7 apkins 7·9 apkins 7·9 apkins 2·9 ed 2·6 11·5			
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Gupta 20019 Jain 2012 ¹⁰ Jothy 2012 ¹¹ Kamath 2013 ¹² Kumar 2011 ¹³ Leuva 2014 ¹⁴ Misra 2013 ¹⁵	Rajasthan Rajasthan Tamil Nadu Karnataka Jharkand Gujarat Haryana	and rural Urban Rural Urban Urban and rural Urban Arural Urban Rural Rural	"All four fathers, with whom we paying for the sanitary napkins should be done on finding chee "Majority of respondent (87%) (N=161) Reasons not using pads (n=226 -Don't know 10·2% -Not easily available 33·6% -Difficulty of disposal 25·7% -High costs 47·3% -Not knowing about it 54·9% Reasons for not using pads (de Difficult to dispose High costs of pads No knowledge about it "The girls from rich families re not use sanitary napkins becaubathrooms." 98/256 used pads 147/256 preferred pads Reason s for using pads,% (n=Safe and easy 77·0 Get stains with cloths 13·6 Cannot get cloth at home 3·1 Absorbs well 2·8 Easily accessible 2·1 Used to it 1·4 Reason for cloth as menstrual a Economical Easily available	enominators not rurban, % substitutes for revealed that the substitutes for revealed that they see of monetary purpose for for revealed that they see of monetary purpose for revealed that they see of the revealed that they see of	reported) Rural, % 55.6 30.8 23.1 use sanita roblems.	One of their eadymade afford sanit was any napking. They also be ack of known ack o	s whereas the girls from urban slum do reported having less access to private t using pads: oveledge: 30·3% 30·9% ity and shyness (no data) using cloths,% (n=582) able 49·7 e 23·7 apkins 7·9 apkins 7·9 apkins 2·9 ed 2·6 11·5			

		_	Cloth more comfortable	30.8		-
Nielsen 2012	Uttar Pradesh	Rural	Reason for cloth as menstrual absor	bent, % (n=513)		
Mirzapur ¹⁷			Economical	61.0		
			Easily available	66.5		
			Can be reused Easy to wash and dispose	19.3		
			Lack of awareness of napkins	0.6		
			Tradition of using cloth	8.2		
			Cloth more comfortable	22.8		
			Family does not allow napkins	0.4		
Nielsen 2012	Uttar Pradesh	Rural	Reason for cloth as menstrual absor			
Sonebhadra ¹⁸			Economical	69.5		
			Easily available Can be reused	83·7 65·3		
			Easy to wash and dispose	4.8		
			Lack of awareness of napkins	0.2		
			Tradition of using cloth	3.7		
			Cloth more comfortable	6.4		
Nielsen 2013	Jharkhand	Rural	Reason for cloth as menstrual absor			
East-			Economical	65.4		
Singhbhum ¹⁹			Easily available Can be reused	67·4 86·7		
			Easy to wash and dispose	10.3		
			Lack of awareness of napkins	0.7		
			Tradition of using cloth	4.8		
			Cloth more comfortable	10.1		
Nielsen 2013	Jharkhand	Rural	Reason for cloth as menstrual absor			
Gumla ²⁰			Economical	48.8		
			Easily available	62.8		
			Can be reused Easy to wash and dispose	89.2		
			Lack of awareness of napkins	0.5		
			Tradition of using cloth	5.3		
			Cloth more comfortable	9.2		
			Family does not allow napkins	0.3		
Nielsen 2013	Bihar	Rural	Reason for cloth as menstrual absor			
Nalanda ²¹			Economical	82.1		
			Easily available Can be reused	65.4		
			Easy to wash and dispose	2·8 1·5		
			Lack of awareness of napkins	0.9		
			Tradition of using cloth	18.4		
			Cloth more comfortable	7.3		
			Family does not allow napkins	0.2		
Nielsen 2013 Vaishali ²²	Bihar	Rural	Reason for cloth as menstrual absor	bent, % (n=322) 75.8		
vaisnaii			Easily available	77.3		
			Can be reused	31.4		
			Easy to wash and dispose	3.4		
			Lack of awareness of napkins	0.3		
			Tradition of using cloth	4.7		
			Cloth more comfortable	6.2		
Prerana 2015 ²³ Rana 2015 ²⁴	Maharashtra Gujarat	Rural	Reason for not using pads (n=54): $(85 (34.8\%))$ had problem of ill-fitt		ith the use	
Kalla 2015	Gujarat	Rural	of cloth. 7 (4.5%) users of sanitary			
Shah 2013 ²⁵	Gujarat	Rural	"During menstrual periods we can"			Reasons for the
	,		play at school, we just sit in the	menstrual cycles), old c		preference for Falalin:
			classroom, but we will be able to pl			-low cost
			now with sanitary pads." (They we	on the skin of our inner "Stains of menstrual blo		-easy availability
			afraid that the old menstrual cloths might fall out while they were	visible on old cloths and		-good absorption capacity
			playing.)	we feel dirty and asham		-No stains visible: can be
			"We don't like sanitary pads as the			dried in visible place
			spoil our clothes."			
			"Sanitary pads need to be changed			
Singh 2006	Punjab	Rural	more frequently." "girls did not use any underwear in	routine before attaining menarc	he"	
IJCM ²⁶	1 unjao	Kurar	"Majority of their respondents (70-			
			routine life."			
Sudeshna	West Bengal	Rural	"reasons for not using sanitary tov			
2012 ²⁷			embarrassment to buy them and lac			
			"it was traditional for them to use that."	cioin as their mothers have also	oeen using	
Verma 2013 ²⁸	Uttar Pradesh	Urban	Willing to use pads: 111/120 (92.5)	Reasons not using pads	: 5	Shyness: 5/63 (7·9)
				High costs 45/63 (71·4)	1	Not comfortable 9/63 (14·3)
771 7 20	77	D :	24 TO C.	Unavailability 4/63 (6.3	3)	
Vidya 2013 ²⁹	Karnataka	Rural	64.7% of the study population felt t	nat sanıtary napkin is the ideal		

absorbent, but in practice only 42.8% were using it and while 35.2% of the study population felt that cloth is the ideal material, in practice 32.7% were using it

Table S2·7: Restrictions and beliefs with regards to menstruation in India, from studies on menstrual hygiene management among adolescent girls, published between 2000 and 2015

Publication (1 st author and year)	State	Setting	Description of restriction or belief	Frequency (%)
Anuradha 2000 ³⁰	Kerala	Rural	Decreased urination: "Do not want to change the cloth in between", "do not want to use the same cloth after urination", "do not want to get noticed", "feels dirty to wear same material after urination" "Non-availability of bathroom"	162/360 (45·0)
Arora 2013 ³¹	Haryana	Rural	Menstruation can be influenced by hot or cold food	196/200 (98.0)
Arunmozhi 2013 ³² Boratne 2014 ⁵	Tamil Nadu Urban Restriction to use toilet or bathroom at home Pondicherry Urban & rural Not allowed to touch anyone before taking bath during menses. To sleep on ground alone without pillow. Not to use flowers on hair. "They are strictly asked not to meet boys to avoic pimples on face. They are supposed to eat all which is served in plate and not to give it to dog thinking it can cause pain in abdomen" "Girls are compelled to take bath early in morning and clean bathroom thereafter. They are also supposed to wash their clothes, bed sheets and mat after getting up." "Certain food items (mango, papaya, sweets, non vegetarian food) cause increase in menstrual flow or result in foul smelling discharge."		56/377 (14·9) No data	
Bhudhagaonkar 2014 ³³	Maharashtra	Rural	Use separate utensils and keep them separate	10/100 (10.0)
Dasgupta 2008 ³⁴	West Bengal	Rural	Not eating food such as sour foods, banana, radish and palm	68/160 (42·5)
Deo 2005 ³⁵	Maharashtra	Urban & rural	Restrictions on type of clothing	46/168 (27.4)
Deo 2005 ³⁵	Maharashtra	Urban & rural	Avoiding interaction with boys	42/168 (25.0)
Dhingra 2009 ³⁶	Jammu & Kashmir	Urban & rural	Not to look in mirror during period	200/200 (100.0)
Dhingra 2009 ³⁶	Jammu & Kashmir	Urban & rural	Stay away from flowing water (e.g. river)	182/200 (91.0)
Gupta 2001 ⁹	Rajasthan	Urban	"In some families, it was the norm to observe isolation for three days. A woman could resume her normal routine only after a bath on the fourth day. These families also had different euphemisms for menses such as "the crow or the lizard has touched her", "she is on rest", "she is away."	No data
Jain 2012 ¹⁰	Rajasthan	Urban	Don't take water from pot	90/161 (55.9)
Kavitha 2012 ³⁷	Tamil Nadu	Urban	Don't sit on threshold	10/144 (6.9)
Khanna 2005 ³⁸	Rajasthan	Urban & rural	Don't wash hair	11/730 (1.5)
Kumar 2011 ¹³	Jharkhand	Urban	"Girls from slum areas believed that if a cow consumes the menstrual cloth or the sanitary napkin, the girl who used it can never become pregnant." "It is believed among most of the girls in the slum areas that if a sanitary napkin is burnt after disposing then the girl who used it can never become pregnant."	No data
Kumari 2014 ³⁹	Jammu & Kashmir	Urban & rural	Practices of other people to clean up themselves after touching a menstruating girl: 1) Spray water 2) Have bath 3) Touch cow	1) Urban: 9/30 (30·0) Rural: 10/30 (33·3) 2) Urban: 13/30 (43·3) Rural: 0/30 (0·0) 3) Urban: 0/30 (0·0) Rural: 2/30 (6·7)
Manhas 2015 ⁴⁰	Jammu & Kashmir	Urban	sprinkle <i>tulsi</i> water or cow urine in the house after they bathe to "make it pure again" Avoid eating citrus food Avoid cold food Avoid spicy food	89% 8% 3%
Minhas 2014 ⁴¹	Maharashtra	Urban & rural	Anybody coming in contact with menstruating girl must clean up by having bath or spray water on themselves	Urban: 13/30 (43·3) Rural: 10/30 (33·3)
Minhas 2014 ⁴¹	Maharashtra	Urban & rural	Not touch cow	2/30 (3·3)
	Maharashtra	Urban & rural	Not eating rice, curd or cucumber	37/60 (61.7)
Minhas 2014 ⁴¹		Rural	Keeping fast	8/300 (2.7)
Minhas 2014 ⁴¹ Mudey 2010 ⁴²	Maharashtra			10 (000 (5.0)
Minhas 2014 ⁴¹ Mudey 2010 ⁴² Mudey 2010 ⁴²	Maharashtra	Rural	Avoiding regular bath	19/300 (6.3)
Minhas 2014 ⁴¹ Mudey 2010 ⁴² Mudey 2010 ⁴² Narayan 2001 ⁴³	Maharashtra Pondicherry	Rural Urban & rural	Should not see birds	68/619 (11.0)
Minhas 2014 ⁴¹ Mudey 2010 ⁴² Mudey 2010 ⁴² Narayan 2001 ⁴³ Narayan 2001 ⁴³	Maharashtra Pondicherry Pondicherry	Rural Urban & rural Urban & rural	Should not see birds Should not sit on threshold	68/619 (11·0) 433/619 (70·0)
Minhas 2014 ⁴¹ Mudey 2010 ⁴² Mudey 2010 ⁴² Narayan 2001 ⁴³ Narayan 2001 ⁴³ Narayan 2001 ⁴³	Maharashtra Pondicherry Pondicherry Pondicherry	Rural Urban & rural Urban & rural Urban & rural	Should not see birds Should not sit on threshold Dog should not eat leftover food	68/619 (11·0) 433/619 (70·0) 450/619 (72·7)
Minhas 2014 ⁴¹ Mudey 2010 ⁴² Mudey 2010 ⁴² Mudey 2010 ⁴² Narayan 2001 ⁴³	Maharashtra Pondicherry Pondicherry	Rural Urban & rural Urban & rural	Should not see birds Should not sit on threshold	68/619 (11·0) 433/619 (70·0)

			of the girl	
Narayan 2001 ⁴³	Pondicherry	Urban & rural	Lizard should not eat the bloody tissues	221/619 (35.7)
Narayan 2001 ⁴³	Pondicherry	Urban & rural	Should not touch plants	429/619 (69·3)
Narayan 2001 ⁴³	Pondicherry	Urban & rural	Should not keep flowers	364/619 (58.8)
Narayan 2001 ⁴³	Pondicherry	Urban & rural	Should not touch infants	239/619 (38.6)
Narayan 2001 ⁴³	Pondicherry	Urban & rural	Should take neem twig when going out	360/619 (58·2)
Narayan 2001 ⁴³	Pondicherry	Urban & rural	Should not go out at noon	338/619 (54.6)
Narayan 2001 ⁴³	Pondicherry	Urban & rural	Should take neem and piece of iron when going to school	211/619 (34·1)
Nemade 2009 ⁴⁴	Maharashtra	Urban	Menstruation can be influenced by hot or cold food	173/217 (79·7)
Parameaswari 2014 ⁴⁵	Tamil Nadu	Urban	Should not touch plants	422/425 (99.3)
Parameaswari 2014 ⁴⁵	Tamil Nadu	Urban	Should not attend exams	23/425 (5.4)
Puri 2006 ⁴⁶	Punjab	Urban & rural	Should not wear new clothes	Not reported
Puri 2006 ⁴⁶	Punjab	Urban & rural	Should not look in the mirror	Not reported
Shanbagh 2012 ⁴⁷	Karnataka	Rural	Consume less food during menstruation	191/329 (58·1)
Sudeshna 2012 ²⁷	West Bengal	Rural	Not picking flowers	128/190 (67.4)
Singh 2006 ⁴⁸	Uttar Pradesh	Urban & Rural	Dangerous to go swimming and running during period	76/504 (15·1)
Singh 2013 ⁴⁹	Uttarakhand	Rural	Menstruation can be influenced by hot or cold food	169/200 (84·5)
Thakre 2011 ⁵⁰	Maharashtra	Urban & rural	Should not sit on threshold	17/387 (4.4)
Thakur 2014 ⁵¹	Maharashtra	Urban	Should wash hair on the third or fourth day of the period	Not reported
Thakur 2014 ⁵¹	Maharashtra	Urban	"It was revealed that women cannot discuss openly at home about menstrual issues and they are considered unclean and untouchable during their menstrual periods. They are not allowed to carry out religious functions and not supposed to participate in the cooking during these periods."	Not reported
Unni 2010 ⁵²	Kerala	Urban	Unhealthy for a girl to swim or bath during period	181/589 (30.7)
Venkatesh 2011 ⁵³	Karnataka	Slum and rural	"A few girls mentioned the belief prevalent in the area that in the event of a crow's shadow falling on that piece of sanitary cloth when drying in the open, it was believed that it would bring misfortune to the family."	Not reported

Figure $S2\cdot 1$: Pooled prevalence of some beliefs with regard to menstruation in India, from studies on menstrual hygiene management among adolescent girls, published between 2000 and 2015

First author and year	State	Setting	Number	Sample size		ES (95% CI)
Menstrual blood is impu	ıre					
Gupta 2001 Public S	Rajasthan	Urban	68	180	*	0.38 (0.31, 0.45)
Boratne 2014	Tamil Nadu	Urban & rural	156	371	-	0.42 (0.37, 0.47)
Nemade 2009	Maharashtra	Urban	157	217	-	0.72 (0.66, 0.78)
Singh 2013	Uttarakhand	Rural	155	200	-	0.77 (0.71, 0.83)
Gupta 2001 Gov S	Rajasthan	Urban	147	180		0.82 (0.75, 0.87)
Arora 2013	Haryana	Rural	197	200		0.99 (0.96, 1.00)
Subtotal (I^2 = 98.7%,		T Caron	107	200		0.71 (0.48, 0.89)
Menstruation is a curse	of god					
Datta 2012	West Bengal	Rural	0	87		0.00 (0.00, 0.04)
Pandit 2014	West Bengal	Rural	4	435	1	0.01 (0.00, 0.02)
Thakre 2011	Maharashtra	Urban & rural	4	387	ī	0.01 (0.00, 0.03)
Sudeshna 2012	West Bengal	Rural	4	190	T _a	0.02 (0.01, 0.05)
Datta 2012	West Bengal	Urban	2	68	<u> </u>	0.03 (0.00, 0.10)
Dasgupta 2008	West Bengal	Rural	10	160	fa.	0.06 (0.03, 0.11)
Verma 2013	Uttar Pradesh	Urban	8	120	-	0.07 (0.03, 0.11)
Goel 2011		Urban	35	478	=	
	Haryana	Rural			T .	0.07 (0.05, 0.10)
Jothy 2012	Tamil Nadu		27	330	*	0.08 (0.05, 0.12)
Shamima 2013	West Bengal	Urban	15	147	*	0.10 (0.06, 0.16)
Gupta 2001 Public S	Rajasthan	Urban	20	180	*	0.11 (0.07, 0.17)
Katkuri 2014	Telangana	Urban	41	250	*	0.16 (0.12, 0.22)
Kamaljit 2012	Punjab	Urban	50	300	*	0.17 (0.13, 0.21)
Shanbhaq 2012	Kamataka	Rural	86	504	*	0.17 (0.14, 0.21)
Leuva 2014	Gujarat	Urban	26	128	-	0.20 (0.14, 0.28)
Gupta 2001 Gov S	Rajasthan	Urban	38	180	*	0.21 (0.15, 0.28)
Ravishankar 2011	Tamil Nadu	Rural	47	200	*	0.23 (0.18, 0.30)
Leuva 2014	Gujarat	Rural	34	128	-	0.27 (0.19, 0.35)
Parameaswari 2014	Tamil Nadu	Urban	229	425	- -	0.54 (0.49, 0.59)
Subtotal (1^2 = 97.6%,	p < 0.01)				◇	0.11 (0.06, 0.18)
Menstruation is a disea						
Katkuri 2014	Telangana	Urban	5	250		0.02 (0.01, 0.05)
Datta 2012	West Bengal	Rural	2	87		0.02 (0.00, 0.08)
Datta 2012	West Bengal	Urban	2	68	-	0.03 (0.00, 0.10)
Jothy 2012	Tamil Nadu	Rural	13	330	•	0.04 (0.02, 0.07)
Sudeshna 2012	West Bengal	Rural	8	190	*	0.04 (0.02, 0.08)
Kamaljit 2012	Punjab	Urban	14	300	•	0.05 (0.03, 0.08)
Dasgupta 2008	West Bengal	Rural	8	160	*	0.05 (0.02, 0.10)
Amirtha 2013	Tamil Nadu	Urban	20	325	•	0.06 (0.04, 0.09)
Ravishankar 2011	Tamil Nadu	Rural	21	200	*	0.10 (0.07, 0.16)
Pandit 2014	West Bengal	Rural	61	435		0.14 (0.11, 0.18)
Bobhate 2011	Maharashtra	Urban	38	241	-	0.16 (0.11, 0.21)
Goel 2011	Haryana	Urban	78	478	-	0.16 (0.13, 0.20)
Paria 2014	West Bengal	Rural	60	266		0.23 (0.18, 0.28)
Paria 2014	West Bengal	Urban	81	275		0.29 (0.24, 0.35)
Kushwah 2007	Madhya Pradesh	Rural	73	199	-	0.37 (0.30, 0.44)
Dube 2012		Urban	39	100		
Dube 2012 Dube 2012	Rajasthan Rajasthan	Rural	39 56	100		0.39 (0.29, 0.49) 0.56 (0.46, 0.66)
Subtotal (I^2 = 96.4%,		Rurai	30	100	<u> </u>	0.13 (0.08, 0.20)
						(2.22)
Menstruation is a result					L	
Jothy 2012	Tamil Nadu	Rural	8	330	€	0.02 (0.01, 0.05)
Dasgupta 2008	West Bengal	Rural	4	160		0.03 (0.01, 0.06)
Kamaljit 2012	Punjab	Urban	15	300		0.05 (0.03, 0.08)
Katkuri 2014	Telangana	Urban	20	250	●	0.08 (0.05, 0.12)
Subtotal (I^2 = 73.0%,	p = 0.01)				0	0.04 (0.02, 0.07)
					1	I
						l

Table S2·8: Quotes and data related to menstruation and school absenteeism or changing absorbents in school in India, from studies on menstrual hygiene management among adolescent girls, published between 2000 and 2015

Publication (1 st author and year)	State	Setting	Descriptions, quotes, or data	
Amirtha 2013 ²	Pondicherry	Urban	Both schools of surveys had separate toilets for girls, but no facility to provide free or low cost pads to students. Menstruation led to inability to concentrate in class. Staining of dress frequent encountered. "The most common reason cited (for school absenteeism during period) was abdominal pain." "Teachers should not scold ut for not carrying pads."	t Bins present in toilets not cleared regularly: 117/325 (36·0) Students not equipped for sudden period: 202/325 (62·2)
Anuradha 2000 ³⁰	Kerala	Rural	"When asked about facilities for changing naph home while 38.5 percent pointed out that there	kins, all the subjects agreed that they had facilities at e is no facility for changing a napkin at the work place students have pointed out that the maintenance of school to the school/college toilet was inadequate."
Arunmozhi 2013 ³²	Tamil Nadu	Urban	"The most common reason cited for taking leave was excessive pain in the back and abdomen" (reported among 78/115 or 67.8% girls with absenteeism during period).	Toilet available at school: 346/371 (93·3) Cleanliness of school toilet: 250/371 (67·4) Water availability: 307/373 (82·3) Disposal availability: 222/370 (59·5) Free pads given in school: 337/379 (88·9)
Bodat 2013 ⁵⁴	Maharashtra	Rural	269/622 absent during period. Mean number of absent days 1·2, sd 0·7, n=269; 78·1% one day absent. Absenteeism during period significantly associated with type of absorbent, dysmenorrhoea, and socioeconomic status.	Reasons for absenteeism or not using toilet facility during menstruation: Same toilet entrance for boys and girls: 71/283 (25·1) Water supply outside bathroom: 66/283 (23·3) Dirty toilets: 67/283 (23·7) No need to change 38/283 (13·5) No dustbin: 12/283 (4·2) No door locking system: 26/283 (9·2) Lack of privacy: 3/283 (1·1)
Gupta 2001 ⁹	Rajasthan	Urban	during periods." "They also complained that w	t that their teachers had instructed them to stay at home while some teachers were sympathetic and kind, many and mental state during those days, and would openly
Jothy 2012 ¹¹	Tamil Nadu	Rural	" many girls shared while interact with them though physically present in the school they pe poorly in terms of concentration and attention. particularly due to constant worry that boys mi out about their status by their movements and expressions." "Another major worry expressed girls was having their menstruation coinciding as they would not get adequate time and oppor clean and change timely." "most of the toilets in schools are in unusabl conditions i.e. without water supply and missir lock system and surrounded by bushes."	reformed menstruation (191/330 or 58%): Lack of water supply for cleaning: 170/191 (89) Facial Pain/discomfort: 140/191 (73·3) I by the Shame: 102/191 (53·4) Lack of privacy for cleaning/washing: 95/191 (49·7) Socio-cultural beliefs: 60/191 (31·4) Fear of menstrual accident/leakage:
Kamath 2013 ¹²	Karnataka	Urban and rural	Reasons not changing pads in schools Feeling uncomfortable in school facility: 399/5 Lack of water and disposal facilities in rural sc Unhygienic conditions for changing absorbent	chools: 68/280 (24·2)
Nielsen 2012 Jaunpur ¹⁶	Uttar Pradesh	Rural	Reasons missing school (n=345) Pain or physical discomfort 87·2% No place to change or dispose 12·5% Fear or staining the clothes 45·2% Shame/embarrassment 5·2% 88·4% misses 1-2 days	Toilets at school: 200/217 (92·2%) Reasons not using toilet at school (n=200): Door remains locked: 4/200 (2%) No water/soap in toilet to wash: 58/200 (29%) No place to dispose absorbent: 24/200 (12%) Door cannot be locked: 16/200 (8%)
Nielsen 2012 Mirzapur ¹⁷	Uttar Pradesh	Rural	Reasons missing school (n=258) Pain or physical discomfort 83·3% No place to change or dispose 8·1% Fear or staining the clothes 41·1% Shame/embarrassment 3·5% 89·5% misses 1-2 days	Toilets at school: 381/433 (88·0%) Reasons not using toilet at school (n=169): No soap in toilet to wash: 7% No place to dispose absorbent: 17%
Nielsen 2012 Sonebhadra ¹⁸	Uttar Pradesh	Rural	Reasons missing school (n=329) Pain or physical discomfort 83·3% No place to change or dispose 5·2% Fear or staining the clothes 24·3% Shame/embarrassment 1·8% 94·5% misses 1-2 days	Toilets at school: 349/423 (82·5%) Reasons not using toilet at school (n=135): No water in toilets: 13% No place to dispose absorbent: 9%
Nielsen 2013 East- Singhbhum ¹⁹	Jharkhand	Rural	Reasons missing school (n=200) Pain or physical discomfort 79·5% No place to change or dispose 9·0% Fear or staining the clothes 37·5% Shame/embarrassment 5·5% 92·5% misses 1-2 days	Toilets at school: 335/378 (88·6%) Reasons not using toilet at school (n=171): Toilets remains locked: 3·0% No water in toilets: 21·7% No soap: 21·6% No place to dispose absorbent: 18·0% Door cannot be latched: 1·7%
Nielsen 2013 Gumla ²⁰	Jharkhand	Rural	Reasons missing school (n=158) Pain or physical discomfort 67·1% No place to change or dispose 14·6%	Toilets at school: 297/424 (70·0%) Reasons not using toilet at school (n=153): Toilets remains locked: 7·8%

			Fear or staining the clothes 38·6% Shame/embarrassment 22·2% 93·0% misses 1-2 days	No water in toilets: 38·0% No soap: 26·8% No place to dispose absorbent: 20·3% Door cannot be latched: 1·3% It is not safe: 6·5% Place is dirty: 1·3%
Nielsen 2013 Nalanda ²¹	Bihar	Rural	Reasons missing school (n=132) Pain or physical discomfort 87·1% No place to change or dispose 1·5% Fear or staining the clothes 10·6% Shame/embarrassment 8·3% 86·4% misses 1-2 days	Toilets at school: 233/293 (79·5%) Reasons not using toilet at school (n=146): No soap: 25·0% No place to dispose absorbent: 26·0%
Nielsen 2013 Vaishali ²²	Bihar	Rural	Reasons missing school (n=293) Pain or physical discomfort 85·7% No place to change or dispose 3·1% Fear or staining the clothes 20·8% Shame/embarrassment 8·2% 81·2% misses 1-2 days	Toilets at school: 393/428 (91·8%) Reasons not using toilet at school (n=271): Toilet remains locked: 7·0% No water in toilet to wash: 19·0% No soap: 16·0% No place to dispose absorbent: 10·0% Doors cannot be latched from inside: 3%
Reddy 2005 ⁵⁵	Andhra Pradesh	Urban	inadequate. The toilets had no roofs or doors	nere the study was conducted, toilet facilities were highly s, thereby offering no privacy. Water supply ted that they were finding it difficult to concentrate on
Sekhon 2014 ⁵⁶	Jammu & Kashmir	Urban	"The common reasons given were discomfo	rt, easily getting tired and the fear of staining their clothes. irst two days of the period that corresponded to heavier
Shah 2013 ²⁵	Gujarat	Rural	"Toilets were non-existent at their workplac toilets in the schools they usually did not ha	es (farms) and in most of their schools. If there were
Sudeshna 2012 ²⁷	West Bengal	Rural	"Bathrooms (at school) do not have proper be dispose of the pads". "Bathrooms were in verification (cleaned only on weeke none of them had any doors". "Water supply continuous (in school toilet)". "We throw it pan but it's difficult to flush due to lack of c water supply. Sometimes we also throw it of toilet window." "It's difficult to carry reusable cloth to school dispose them off—so we prefer being absent	Lack of proper disposal facility: 143/190 (75·3) Inds) and Lack of continuous water supply: 127/190 (66·8) In the toilet constant Told by relatives: 89/190 (46·8) Intitiate the Fear of leakage: 45/190 (23·7) Socially withdrawn: 10/190 (5·3)
Thakur 2014 ⁵¹	Maharashtra	Urban	teachers were quite supportive. But in certai facilities, the girls had to go home. Some gir schools in case of emergency. The most con	the girls do not face any problems in school and that the n public schools where there were no special toilet rls mentioned that sanitary pads were available in some mon worries expressed during qualitative methods were missing the school, the concern about what is happening to ne menses."

Table S2.9: Subgroup analysis and meta-regression of factors that may affect school absence during menstruation among adolescents, studies in India published between 2000 and 2015

	Univariate anal	lysis							
Covariate	Type of covariate	No. of Surve	Pooled Prevalence	I ² , %	Odds ratio, 95% CI for meta-	p-value by level	$ au^2$	Variance explained	p-value overall
		ys	%		regression			(%)	
No covariates		64	24, 19-30	98.5			0.976		
Recruitment of study	Community	19	31, 19-44	98.7	1.00		1.003	0.0	0.871
population	School	41	22, 17-28	98.0	0.86, 0.49-1.51	0.605			
	Other	4	18, 11-28	93.9	0.87, 0.29 - 2.63	0.801			
Setting of study	Rural	33	28, 20-36	98.4	1.00		0.976	0.1	0.397
	Urban	24	23, 16-31	98.4	0.76, 0.45-1.29	0.303			
	Slum	6	12, 9-16	64.6	0.50, 0.21-1.22	0.126			
	Combination	1	26, 23-29		1.25, 0.17-9.34	0.824			
Last year of study	Continuous	64			1.00, 0.93-1.09	0.945	0.992	0.0	0.945
	< 2010	17	25, 16-35	97.7	1.00		0.9913	0.0	0.841
	≥2010	47	24, 18-31	98.7	0.94, 0.54-1.66	0.841			
Region of study	North	9	8, 5-13	91.5	1.00		0.6412	34.3	<0.0001
	Central	5	48, 27-70	98.7	5.96, 2.43-14.64	< 0.0001			
	East	14	39, 28-51	97.9	5.11, 2.57-10.19	< 0.001			
	West	21	14, 9-20	96.2	1.67, 0.88-3.19	0.114			
	South	15	31, 19-43	98.5	3.62, 1.83-7.15	< 0.0001			
Commercial pad	Continuous	53			0.99, 0.98-0.99	0.023	1.025	8.0	0.023
Cloth use	Continuous	48			1.01, 1.00-1.02	0.042	1.005	6.8	0.042
Completely or partly	Completely	60	24, 18-30	98.6	0.63, 0.23-1.77	0.377	0.979	0.0	0.377
adolescents	Partly	4	32, 15-51	94.8	1.00				
Self-administered or	Self	30	18, 13-23	97.5	0.61, 0.37-0.99	0.045	0.928	4.9	0.045
interview	Interviewed	34	31, 22-40	98.8	1.00	0 0 .5	0 ,20	. ,	0 0 .5
Quality score	Continuous	64	01,22 .0	70 0	1.28, 1.10-1.48	0.002	0.841	13.8	0.002
Quanty score	>4	16	41, 30-53	98.7	2.53, 1.50-4.29	0.001	0.824	15.6	0.001
	≤4	48	19, 15-24	97.6	1.00	0 001	0 024	13 0	0 001
Study is a random	Yes	18	37, 26-49	98.8	2.19, 1.31-3.68	0.004	0.863	11.6	0.004
sample	No	46	20, 15-25	97.7	1.00	0.004	0.003	11.0	0.004
sample	Multivariate an		20, 13-23	91.1	1.00		0.592	39.3	<0.0001
Region of study	North	9			1.00		0.392	39.3	<0.0001
Region of study	Central	5			5.58, 2.35-13.25	< 0.0001			
	East	3 14			5·58, 2·35-13·25 5·52, 2·83-10·75	<0.0001 <0.0001			
	West	21			1.87, 1.00-3.50	0.050			
	South	15			3·85, 2·00-7·42	<0.0001			
Calf administered									
Self-administered or	Self	30 34			0.62, 0.42-0.92	0.019			
interview	Interviewed		1 4		1.00				
Absorbents in separate			s above*		0.00.0.00.1.00	0.222			
Commercial pad	Continuous	53			0.99, 0.98-1.00	0.232			
Cloth	Continuous	48			1.00, 0.99-1.01	0.543			

^{*}Models were repeated with the significant factors (region of study and method of data collection) and the absorbents separately, because of the smaller sample size. In these models, the factors significant in multivariate analyses remained significant, whereas commercial pad use or cloth use was not.

Table S2·10: Articles with information on reaction of Indian adolescents to menarche published between 2000 and 2015

Publication (1st author and vear) Barathalakshmi 2014⁵ Bobhate 2011⁵ Deo 2005 Dube 2012⁸ **Gupta 2001**⁹ Kamath 2013¹² Kumar 2011 13 Mudey 2010⁴² Nemade 2009⁴⁴ All Nielsen reports¹⁶⁻²² Paria 2014⁵ Patle 2014⁶⁰ Pokhrel 2014⁶¹ Prerana 2015²³ Rani 2014⁶² Reddy 2005⁵⁵ Shanbhag 2012⁴⁷ Tiwari 2006⁶³ **Udgiri 2010**⁶⁴ Vidya 2013²⁹ Venkatesh 2011⁵³ Zaidi 2015⁶

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Menstrual hygiene management among adolescent girls in India: a systematic review and Meta-Analysis

Supplement 3: Forest plots for outcomes examined

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Figure S3.24: Restrictions with regards to leaving the house or isolation during menstruation among adolescent girls by region, studies published in India between 2000 and 201528
Figure S3.25: Restrictions with regards to attending social functions during menstruation among adolescent girls by region, studies published in India between 2000 and 201529
Figure S3.26: Restrictions with regards to place of sleeping during menstruation among adolescent girls by region, studies published in India between 2000 and 2015
Figure S3.27: Restrictions with regards to touching food or people during menstruation among adolescent girls by region, studies published in India between 2000 and 2015
Figure S3.28: Restrictions with regards to sitting arrangements during menstruation among adolescent girls by region, studies published in India between 2000 and 2015
Figure S3.29: No restrictions at all during menstruation among adolescent girls by region, studies published in India between 2000 and 2015
Figure S3.30: School absenteeism because of menstruation among adolescent girls by region, studies published in India between 2000 and 2015
Figure S3.31: Change of absorbent in school during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Notes on forest plots

The forest plots are stratified by region. The graphs for awareness before menarche and for commercial pad use were split in two because of their size. The forest plots for resources for knowledge on menstruation are not presented. The overall estimates for outcomes examined are available in Table 2-5 of the main paper.

Figure S3.1A: Awareness among adolescent girls of menarche by region, studies published in India between 2000 and 2015: North, Central and East India

publication year	State	Setting	Number	Sample size		Proportion (95% CI)	% Weigh
North India							
Channa 2005	Rajasthan	Rural	8	281	•	0.03 (0.01, 0.06)	5.02
Mahajan 2004	Jammu & Kashmir	Rural	14	200	•	0.07 (0.04, 0.11)	4.99
Khanna 2005	Raiasthan	Urban	40	330		0.12 (0.09, 0.16)	5.03
Baridalyne 2004	New Delhi	Urban	36	254	-	0.14 (0.10, 0.19)	5.01
Mahajan 2004	Jammu & Kashmir	Urban	30	200	-	0.15 (0.11, 0.21)	4.99
Arora 2013	Haryana	Rural	32	200	-	0.16 (0.12, 0.22)	4.99
Supta 2001	Rajasthan	Urban	57	180	~ _	0.32 (0.25, 0.39)	4.99
Singh 2013	Uttarakhand	Rural	65	200	-	0.32 (0.26, 0.39)	4.99
Nair 2007	New Delhi	Rural	94	251	<u> </u>	0.37 (0.32, 0.44)	5.01
Oube 2012	Rajasthan	Rural	38	100	-	0.38 (0.29, 0.48)	4.91
Gupta 2001	Rajasthan	Urban	77	180	-	0.43 (0.36, 0.50)	4.99
Jain 2012		Rural	85	161			4.97
	Rajasthan Uttarakhand	Urban	122	214	-	0.53 (0.45, 0.60)	5.00
Juyal 2013						0.57 (0.50, 0.63)	
Kumar 2015 IJCRR	Chandigarh	Combined	448	744		0.60 (0.57, 0.64)	5.06
Kumar 2013	Chandigarh	Combined	448	744		0.60 (0.57, 0.64)	5.06
Kamaljit 2012	Punjab	Urban	184	300	*	0.61 (0.56, 0.67)	5.02
Ohingra 2009	Jammu & Kashmir	Combined	128	200	-	0.64 (0.57, 0.70)	4.99
Oube 2012	Rajasthan	Urban	68	100	-	0.68 (0.58, 0.76)	4.91
luyal 2013	Uttarakhand	Rural	170	239	*	0.71 (0.65, 0.77)	5.01
Patavegar 2014	New Delhi	Urban	330	440	•	0.75 (0.71, 0.79)	5.04
Subtotal (1^2 = 98.7%, p =	0.00)				\Diamond	0.39 (0.28, 0.51)	100.0
Central India							
N. 2012 Jaunpur	Uttar Pradesh	Rural	91	600	•	0.15 (0.13, 0.18)	14.34
N. 2012 Mirzapur	Uttar Pradesh	Rural	204	600	•	0.34 (0.30, 0.38)	14.34
Katiyar 2013	Uttar Pradesh	Rural	148	384	*	0.39 (0.34, 0.44)	14.30
Kushwah 2007	Madhya Pradesh	Rural	108	199	*	0.54 (0.47, 0.61)	14.22
/ema 2013	Uttar Pradesh	Urban	70	120	-	0.58 (0.49, 0.67)	14.10
N. 2012 Sonebhadra	Uttar Pradesh	Rural	410	600	•	0.68 (0.65, 0.72)	14.34
Supta 2006	Uttar Pradesh	Urban	1405	1700	•	0.83 (0.81, 0.84)	14.38
Subtotal (I^2 = 99.5%, p =						0.50 (0.28, 0.73)	100.0
East India							
Shattacherjee 2013	West Bengal	Slum	187	798		0.23 (0.21, 0.26)	6.89
Paria 2014	West Bengal	Rural	80	266	-	0.30 (0.25, 0.36)	6.74
N. 2013 East Singhbhum	Jharkand	Rural	220	600	-	0.37 (0.33, 0.41)	6.87
Datta 2012	West Bengal	Rural	34	87		0.39 (0.29, 0.50)	6.29
Sudeshna 2012	West Bengal	Rural	80	190	**	0.42 (0.35, 0.49)	6.64
Shamima 2013	West Bengal	Urban	62	147	-	0.42 (0.34, 0.50)	6.55
Sarkar 2012	West Bengal	Rural	226	510	-	0.44 (0.40, 0.49)	6.85
N. 2013 Vaishali	Bihar	Rural	268	600	=	0.45 (0.41, 0.49)	6.87
v. 2013 Valstiali Paria 2014	West Bengal	Urban	123	275	<u>=</u>		6.74
			345	600		0.45 (0.39, 0.51)	6.87
N. 2013 Nalanda	Bihar West Bengel	Rural	345 53	86	-	0.57 (0.54, 0.61)	
albiaknungi 2015	West Bengal	Rural			-	0.62 (0.51, 0.71)	6.29
N. 2013 Gumla	Jharkand	Rural	382	600	•	0.64 (0.60, 0.67)	6.87
Dasgupta 2008	West Bengal	Rural	108	160	-	0.68 (0.60, 0.74)	6.59
Oatta 2012	West Bengal	Urban	49	68	_	0.72 (0.60, 0.81)	6.13
Pandit 2014	West Bengal	Rural	315	435	**	0.72 (0.68, 0.76)	6.83
Subtotal (I^2 = 97.4%, p =	: 0.00)				~	0.49 (0.41, 0.58)	100.0

Figure~S3.1B: Awareness among adolescent girls of menarche by region, studies published in India between 2000 and 2015, West and South India

	State	Setting	Number	size		(95% CI)	Weigh
West India							
Bobhate 2011	Maharashtra	Slum	49	241	-	0.20 (0.16, 0.26)	5.31
Gosavi 2015	Maharashtra	Urban	15	60	<u></u>	0.25 (0.16, 0.25)	5.08
Dongre 2007	Maharashtra	Rural	95	271		0.35 (0.30, 0.41)	5.32
Kale Kalpana 2014	Maharashtra	Rural	63	178	*		5.28
Naie Naipana 2014 Thakre 2011			143	387		0.35 (0.29, 0.43)	5.34
	Maharashtra	Combined				0.37 (0.32, 0.42)	
Deo 2007	Maharashtra	Urban	40	94		0.43 (0.33, 0.53)	5.19
Patle 2013	Maharashtra	Rural	137	288		0.48 (0.42, 0.53)	5.32
euva 2014	Gujarat	Rural	68	128	-	0.53 (0.45, 0.62)	5.24
Deo 2007	Maharashtra	Rural	41	74	,+*++**	0.55 (0.44, 0.66)	5.14
Thakur 2014	Maharashtra	Urban	56	96	-	0.58 (0.48, 0.68)	5.19
Tiwari 2006	Gujarat	Combined	478	763	•	0.63 (0.59, 0.66)	5.36
Patle 2013	Maharashtra	Urban	187	295	*	0.63 (0.58, 0.69)	5.32
.euva 2014	Gujarat	Urban	93	128	-	0.73 (0.64, 0.80)	5.24
Shitole 2012	Maharashtra	Rural	167	224	-	0.75 (0.68, 0.80)	5.30
Dambhare 2012	Maharashtra	Combined	424	561		0.76 (0.72, 0.79)	5.35
Solanki 2012	Gujarat	Urban	58	68	-	0.85 (0.75, 0.92)	5.12
/erma 2011	Gujarat	Urban	656	745		0.88 (0.86, 0.90)	5.36
Sumana 2015	Gujarat	Urban	119	128	-	0.93 (0.87, 0.96)	5.24
Vemade 2009	Maharashtra	Urban	217	217		1.00 (0.98, 1.00)	5.30
Subtotal (I^2 = 98.6%, p	0.00)					0.61 (0.49, 0.73)	100.0
South India							
Reddy 2005	Andhra Pradesh	Urban	32	232	-	0.14 (0.10, 0.19)	3.72
Jdgiri 2010	Kamataka	Slum	63	342	~	0.18 (0.15, 0.23)	3.78
Zaidi 2015	Tamil Nadu	Urban	28	150	Ξ.	0.19 (0.13, 0.26)	3.66
Anuradha 2000	Kerala	Rural	95	360		0.26 (0.22, 0.31)	3.76
Barathalakshmi 2014	Tamil Nadu	Urban	123	435	<u> </u>	0.28 (0.24, 0.33)	3.78
					=		
Rani 2014	Andhra Pradesh	Rural	117	400	- -	0.29 (0.25, 0.34)	3.77
Kamath 2013	Kamataka	Urban	83	270	- T	0.31 (0.26, 0.36)	3.74
Preeti 2015	Telangana	Urban	210	640	***	0.33 (0.29, 0.37)	3.80
Amirtha 2013	Pondicherry	Urban	108	325	*	0.33 (0.28, 0.39)	3.76
Anitha 2015	Kamataka	Rural	21	61	-	0.34 (0.24, 0.47)	3.43
Khan 2012	Kamataka	Rural	71	199	*	0.36 (0.29, 0.43)	3.70
Nagamani 2014	Andhra Pradesh	Slum	36	100	-	0.36 (0.27, 0.46)	3.58
logdand 2011	Andhra Pradesh	Slum	93	257	*	0.36 (0.31, 0.42)	3.73
Pokhrel 2014	Kamataka	Urban	115	303	*	0.38 (0.33, 0.44)	3.75
Arunmozhi 2013	Tamil Nadu	Urban	145	366	*	0.40 (0.35, 0.45)	3.77
Audinarayana 2005	Tamil Nadu	Rural	118	225	-	0.52 (0.46, 0.59)	3.72
(atkuri 2014	Telangana	Urban	134	250	-	0.54 (0.47, 0.60)	3.73
Shanbhag 2012	Kamataka	Rural	190	329	*	0.58 (0.52, 0.63)	3.76
/enkatesh 2011	Kamataka	Combined	139	240	*****	0.58 (0.52, 0.64)	3.73
Omidvar 2011	Kamataka	Urban	116	194	*	0.60 (0.53, 0.66)	3.70
Jnni 2010	Kerala	Urban	366	589	•	0.62 (0.58, 0.66)	3.79
lyothi 2005	Kerala	Urban	188	300	-	0.63 (0.57, 0.68)	3.75
(avitha 2012	Tamil Nadu	Urban	97	144		0.67 (0.59, 0.74)	3.65
Ade 2013	Kamataka	Rural	55	80		0.69 (0.58, 0.78)	3.52
(amath 2013	Kamataka	Rural	197	280	-	0.70 (0.65, 0.75)	3.74
Jothy 2012	Tamil Nadu	Rural	237	330	<u> </u>	0.72 (0.67, 0.76)	3.76
Anusree 2014	Kamataka	Urban	53	60		0.88 (0.78, 0.94)	3.42
-nusree 2014 Subtotal (I^2 = 97.4%, p		Orban	33	30	_ ~		100.0
) — U.UU)				~	0.45 (0.38, 0.52)	100.0

Figure S3.2: Mother as source of awareness of menarche among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weig
North India					ļ.		
Gupta 2001	Rajasthan	Urban	8	57	-	0.14 (0.06, 0.26)	2.20
Gupta 2001	Rajasthan	Urban	11	77	-	0.14 (0.07, 0.24)	2.29
Arora 2013	Harvana	Rural	7	32	-	0.22 (0.09, 0.40)	1.98
Juval 2013	Uttarakhand	Rural	51	170	-	0.30 (0.23, 0.37)	2.44
Juyal 2013	Uttarakhand	Urban	40	122	- Ta-	0.33 (0.25, 0.42)	2.39
Nair 2007	New Delhi	Rural	39	94	-	0.41 (0.31, 0.52)	2.34
Kumar 2015 IJCRR	Chandigarh	Combined	210	448	-	0.47 (0.42, 0.52)	2.52
Kumar 2013	Chandigarh	Combined	210	448	-	0.47 (0.42, 0.52)	2.52
Kamaljit 2012	Punjab	Urban	160	184		0.87 (0.81, 0.91)	2.45
Subtotal (I^2 = 96.9%		Orban	100	104		0.37 (0.24, 0.52)	21.12
Central India							
Katiyar 2013	Uttar Pradesh	Rural	99	148	-	0.67 (0.59, 0.74)	2.42
East India					į		
Shamima 2013	West Bengal	Urban	27	62	-	0.44 (0.31, 0.57)	2.23
Sudeshna 2012	West Bengal	Rural	36	80		0.45 (0.34, 0.57)	2.30
Sarkar 2012	West Bengal	Rural	107	226	-	0.47 (0.41, 0.54)	2.47
Dasgupta 2008	West Bengal	Rural	60	108	<u> </u>	0.56 (0.46, 0.65)	2.38
Lalbiaknungi 2015	West Bengal	Rural	32	53	The .	0.60 (0.46, 0.05)	2.18
Pandit 2014	West Bengal	Rural	199	315	134	0.63 (0.58, 0.69)	2.18
Paria 2014	West Bengal	Urban	91	123	-	0.74 (0.65, 0.81)	2.39
Paria 2014	West Bengal	Rural	65	80	-		2.30
Fana 2014 Subtotal (I^2 = 88.1%		Rurai	00	ou		0.81 (0.71, 0.89) 0.59 (0.50, 0.68)	18.7
•	s, p = 0.00)				_	0.56 (0.50, 0.00)	10.7
West India Deo 2007	Maharashtra	Urban	11	40		0.28 (0.15, 0.44)	2.08
Patle 2013	Maharashtra	Urban	60	187		0.32 (0.25, 0.39)	2.45
Gosavi 2015	Maharashtra	Urban	5	15		0.33 (0.12, 0.62)	1.58
Thakur 2014	Maharashtra	Urban	20	56		0.36 (0.23, 0.50)	2.20
Patle 2013	Maharashtra	Rural	50	137		0.36 (0.28, 0.45)	2.41
Nemade 2009	Maharashtra	Urban	94	217		0.43 (0.37, 0.50)	2.47
Shah 2013	Gujarat	Rural	29	65		0.45 (0.32, 0.57)	2.24
Dambhare 2012	Maharashtra	Combined	214	424			2.52
Bobhate 2011	Maharashtra	Slum	27	49		0.50 (0.46, 0.55)	2.15
			_	478	76	0.55 (0.40, 0.69)	
Tiwari 2008	Gujarat	Combined	290		T.	0.61 (0.56, 0.65)	2.53
Verma 2011 Solanki 2012	Gujarat	Urban Urban	426 39	656 58	-	0.65 (0.61, 0.69)	2.54
	Gujarat				-	0.67 (0.54, 0.79)	2.21
Thakre 2011	Maharashtra	Combined	102	143	-	0.71 (0.63, 0.79)	2.41
Sumana 2015	Gujarat	Urban	100		-	0.84 (0.76, 0.90)	2.38
Subtotal (I^2 = 93.6%	, p = 0.00)				Y	0.52 (0.43, 0.60)	32.1
South India Khan 2012	Kamataka	Rural	19	71		0.27 (0.17, 0.20)	2.27
	Andhra Pradesh	Slum	19	36		0.27 (0.17, 0.39)	2.03
Nagamani 2014						0.47 (0.30, 0.65)	
Omidvar 2011	Kamataka	Urban	55	116	-	0.47 (0.38, 0.57)	2.38
Preeti 2015	Telangana	Urban	109	210	10.	0.52 (0.45, 0.59)	2.46
Omidvar 2010	Kamataka	Urban	116	217	<u>₹</u> _	0.53 (0.47, 0.60)	2.47
Jogdand 2011	Andhra Pradesh	Slum	57	93	-	0.61 (0.51, 0.71)	2.33
Udgiri 2010	Kamataka	Slum	40	63	-	0.63 (0.50, 0.75)	2.23
Amirtha 2013	Pondicherry	Urban	71	108	-	0.66 (0.56, 0.75)	2.36
Pokhrel 2014	Kamataka	Urban	82	115	-	0.71 (0.62, 0.79)	2.38
Ade 2013	Kamataka	Rural	41	55	-	0.75 (0.61, 0.85)	2.19
Jothy 2012	Tamil Nadu	Rural	185	237	<u> </u>	0.78 (0.72, 0.83)	2.47 25.5
Subtotal (I^2 = 90.2%					~	0.59 (0.50, 0.67)	20.5
Heterogeneity between Overall (I^2 = 94.10%					•	0.52 (0.47, 0.57)	100.
012 - 04.10%	, p 0.00/,				Ť	0.02 (0.47, 0.07)	100.
Heterogeneity betwee Overall (I^2 = 94.10%					O .25 .5 .75	0.52 (0.47, 0.57)	

Figure S3.3: Friend as source of awareness of menarche among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weigh
North India					_		
Kamaljit 2012	Punjab	Urban	19	184	*_	0.10 (0.06, 0.16)	
Nair 2007	New Delhi	Rural	18	94	- • · ·	0.19 (0.12, 0.29)	
Dube 2012	Rajasthan	Rural	9	38	-	0.24 (0.11, 0.40)	2.40
Kumar 2015 IJCRR	Chandigarh	Combined	127	448	*	0.28 (0.24, 0.33)	2.92
Kumar 2013	Chandigarh	Combined	127	448	*	0.28 (0.24, 0.33)	
Juval 2013	Uttarakhand	Urban	35	122	-	0.29 (0.21, 0.38)	
Dube 2012	Rajasthan	Urban	20	68	-	0.29 (0.19, 0.42)	
Juyal 2013	Uttarakhand	Rural	58	170	-	0.34 (0.27, 0.42)	
Gupta 2001	Raiasthan	Urban	43	77		0.56 (0.44, 0.67)	
Gupta 2001	Rajasthan	Urban	35	57		0.61 (0.48, 0.74)	
Arora 2013		Rural	23	32			
Subtotal (I^2 = 91.8)	Haryana %, p = 0.00)	Rurai	23	32	◇	0.72 (0.53, 0.86) 0.34 (0.26, 0.42)	
Central India							
Katiyar 2013	Uttar Pradesh	Rural	14	148	-	0.09 (0.05, 0.15)	2.81
East India							
Sudeshna 2012	West Bengal	Rural	33	80		0.41 (0.30, 0.53)	2.67
Dasgupta 2008	West Bengal	Rural	46	108		0.43 (0.33, 0.52)	
Shamima 2013	West Bengal	Urban	30	62	<u> </u>	0.48 (0.35, 0.61)	
Sarkar 2013	West Bengal	Rural	128	226		0.46 (0.35, 0.61)	
Subtotal (I^2 = 66.0°		rxurai	120	220	◇	0.48 (0.40, 0.56)	
West India							
Sumana 2015	Gujarat	Urban	6		-	0.05 (0.02, 0.11)	2.77
Verma 2011	Gujarat	Urban	78	656	•	0.12 (0.10, 0.15)	
Solanki 2012	Guiarat	Urban	7	58	 !	0.12 (0.05, 0.23)	
Tiwari 2006	Gujarat	Combined	65	478	•	0.14 (0.11, 0.17)	
Patle 2013	Maharashtra	Urban	27	187	=	0.14 (0.10, 0.20)	
Patle 2013	Maharashtra	Rural	22	137	-	0.16 (0.10, 0.23)	
Thakre 2011	Maharashtra	Combined	26	143	-	0.18 (0.12, 0.25)	
Bobhate 2011	Maharashtra	Slum	9	49		0.18 (0.09, 0.32)	
Nemade 2009	Maharashtra	Urban	57	217		0.26 (0.21, 0.33)	
Shah 2013	Gujarat	Rural	18	65	<u>=</u>	0.28 (0.17, 0.40)	
Dambhare 2012	Maharashtra	Combined	181	424	7 -	0.43 (0.38, 0.48)	
Gosavi 2015	Maharashtra	Urban	8	15	-		
		Orban	0	15	~	0.53 (0.27, 0.79)	
Subtotal (I^2 = 94.4°	%, p = 0.00)				S	0.19 (0.13, 0.27)	32.39
South India Preeti 2015	Telangana	Urban	20	210	_	0.10 (0.06, 0.14)	2.86
Amirtha 2013	Pondicherry	Urban	17	108	<u>"In-</u> 1	0.16 (0.09, 0.24)	
Ade 2013	Karnataka	Rural	9	55	TAL	0.16 (0.08, 0.24)	
					<u> </u>		
Nagamani 2014	Andhra Pradesh Karnataka	Urban	6 21	36 115	-	0.17 (0.06, 0.33)	
Pokhrel 2014					-	0.18 (0.12, 0.27)	
Jogdand 2011	Andhra Pradesh		21	93	-	0.23 (0.15, 0.32)	
Khan 2012	Karnataka	Rural	23	71	70-	0.32 (0.22, 0.45)	
Omidvar 2010	Karnataka	Urban	76	217		0.35 (0.29, 0.42)	
Jothy 2012	Tamil Nadu	Rural	105	237	<u>. •</u>	0.44 (0.38, 0.51)	
Subtotal (I^2 = 92.0	%, p = 0.00)				>	0.23 (0.15, 0.32)	24.36
		158				0.27 (0.22 0.22)	100.0
overall (1"2 = 94.49"	76, p = 0.00);				9	U.27 (U.22, U.32)	100.00
Heterogeneity betwe Overall (I^2 = 94.49		058			0 25 5 75 1	0.27 (0.22, 0.32)	_

Figure S3.4: Relatives as source of awareness of menarche among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weigh
North India							
Kamaliit 2012	Puniab	Urban	38	184	-	0.21 (0.15, 0.27)	3.41
Kumar 2013	Chandigarh	Combined	116	448	Ties	0.26 (0.22, 0.30)	3.60
Kumar 2015 IJCRR	Chandigarh	Combined	116	448	I	0.26 (0.22, 0.30)	3.60
Gupta 2001	Rajasthan	Urban	21	77		0.27 (0.18, 0.39)	
Juyal 2013	Uttarakhand	Rural	48	170	-	0.28 (0.22, 0.36)	
Nair 2007	New Delhi	Rural	27	94	_	0.29 (0.20, 0.39)	
Juyal 2013	Uttarakhand	Urban	40	122	1	0.33 (0.25, 0.42)	3.26
Dube 2012	Rajasthan	Urban	28	68		0.41 (0.29, 0.54)	
Gupta 2001	Rajasthan	Urban	24	57		0.42 (0.29, 0.56)	
Dube 2012	Rajasthan	Rural	8	38		0.42 (0.23, 0.36)	
Subtotal (I^2 = 54.0)		Kurai	0	36	•	0.28 (0.25, 0.32)	
Central India							
Katiyar 2013	Uttar Pradesh	Rural	16	148	-	0.11 (0.06, 0.17)	3.34
East India					L !		
Dasgupta 2008	West Bengal	Rural	2	108	* 1	0.02 (0.00, 0.07)	
Sarkar 2012	West Bengal	Rural	16	226	←	0.07 (0.04, 0.11)	3.47
Shamima 2013	West Bengal	Urban	5	62	-	0.08 (0.03, 0.18)	2.90
Subtotal (I^2 = 62.0	%, p = 0.07)				>	0.05 (0.02, 0.10)	9.57
West India					Li		
Sumana 2015	Gujarat	Urban	6		<u>*</u>	0.05 (0.02, 0.11)	
Gosavi 2015	Maharashtra	Urban	2	15		0.13 (0.02, 0.40)	1.71
Tiwari 2006	Gujarat	Combined	76	478	•	0.16 (0.13, 0.19)	
Thakur 2014	Maharashtra	Urban	10	56		0.18 (0.09, 0.30)	
Verma 2011	Gujarat	Urban	122	656	•	0.19 (0.16, 0.22)	3.65
Patle 2013	Maharashtra	Urban	42	187	 • 	0.22 (0.17, 0.29)	
Nemade 2009	Maharashtra	Urban	50	217	 • 	0.23 (0.18, 0.29)	
Thakre 2011	Maharashtra	Combined	34	143	 • 	0.24 (0.17, 0.32)	
Bobhate 2011	Maharashtra	Slum	13	49	- • -	0.27 (0.15, 0.41)	2.73
Patle 2013	Maharashtra	Rural	41	137		0.30 (0.22, 0.38)	3.31
Subtotal (I^2 = 78.8	%, p = 0.00)				P	0.19 (0.15, 0.24)	31.29
South India	Kt-l				L i	0.00 (0.00 5.45)	0.70
Anusree 2014	Kamataka	Urban	1	53	T !	0.02 (0.00, 0.10)	
Jogdand 2011	Andhra Pradesh		2	93	T.,	0.02 (0.00, 0.08)	3.13
Jothy 2012	Tamil Nadu	Rural	17	237	南	0.07 (0.04, 0.11)	
Nagamani 2014	Andhra Pradesh		5	36	- T	0.14 (0.05, 0.29)	
Preeti 2015	Telangana	Urban	30	210	市	0.14 (0.10, 0.20)	
Khan 2012	Kamataka	Rural	11	71		0.15 (0.08, 0.26)	
Ade 2013	Kamataka	Rural	9	55	- Table	0.16 (0.08, 0.29)	
Udgiri 2010	Karnataka	Slum	15	63	-	0.24 (0.14, 0.36)	
Subtotal (I^2 = 80.2	%, p = 0.00)				~	0.11 (0.06, 0.16)	24.04
Heterogeneity betwe		65				0.40/0.45 5.24	400.5
Overall (I^2 = 89.41	%, p = 0.00);				Ÿ	0.18 (0.15, 0.21)	100.00
					25 .5 .75	1	

Figure S3.5: Teachers as source of awareness of menarche among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year State	Setting	Number	Sample	,	Proportion (95% CI)	% Weight
North India Gupta 2001 Rajasthan Juyal 2013 Uttarakhand Gupta 2001 Rajasthan Juyal 2013 Uttarakhand Kamaljit 2012 Punjab Patavegar 2014 New Delhi Subtotal (I^2 = 97.5%, p = 0.0	Urban Urban Urban Urban	1 4 2 6 35 135	77 170 57 122 184 330	.	0.01 (0.00, 0.07) 0.02 (0.01, 0.06) 0.04 (0.00, 0.12) 0.05 (0.02, 0.10) 0.19 (0.14, 0.25) 0.41 (0.36, 0.46) 0.09 (0.01, 0.25)	4.10 3.77 4.03 4.11 4.19
Central India Katiyar 2013 Uttar Prades	h Rural	7	148	•	0.05 (0.02, 0.10)	4.07
East India Sarkar 2012 West Bengal Sudeshna 2012 West Bengal Pandit 2014 West Bengal Subtotal (I^2 = 97.0%, p = 0.0	Rural Rural	6 12 79	226 80 315	-	0.03 (0.01, 0.06) 0.15 (0.08, 0.25) 0.25 (0.20, 0.30) 0.13 (0.01, 0.32)	3.91 4.19
West India Verma 2011 Gujarat Solanki 2012 Gujarat Dambhare 2012 Maharashtra Tiwari 2006 Gujarat Thakre 2011 Maharashtra Deo 2007 Maharashtra Patle 2013 Maharashtra Patle 2013 Maharashtra Thakur 2014 Maharashtra Subtotal (I^2 = 95.7%, p = 0.0	Combined Combined Rural Rural Urban Urban	29	656 58 424 478 143 41 137 187 56	• • • • • • • • • • • • • • • • • • •	0.02 (0.01, 0.03) 0.03 (0.00, 0.12) 0.04 (0.02, 0.06) 0.06 (0.04, 0.09) 0.12 (0.07, 0.18) 0.12 (0.04, 0.26) 0.18 (0.12, 0.25) 0.31 (0.24, 0.38) 0.39 (0.26, 0.53) 0.12 (0.06, 0.20)	3.78 4.21 4.22 4.07 3.61 4.06 4.12 3.77
South India Amirtha 2013 Pondicherry Pokhrel 2014 Karnataka Jogdand 2011 Andhra Prad Nagamani 2014 Andhra Prad Khan 2012 Karnataka Preeti 2015 Telangana Subtotal (I^2 = 75.0%, p = 0.0	esh Slum Rural Urban 00)	8 12 13 6 15	108 115 93 36 71 210	****	0.07 (0.03, 0.14) 0.10 (0.06, 0.18) 0.14 (0.08, 0.23) 0.17 (0.06, 0.33) 0.21 (0.12, 0.32) 0.24 (0.18, 0.30) 0.15 (0.10, 0.21)	4.00 4.02 3.96 3.53 3.87 4.14
Overall (I ² = 95.73%, p = 0.0				\$	0.12 (0.07, 0.17)	100.00
				0 .25 .5 .75	1	

Figure S3.6: Media (books or electronic) as source of awareness of menarche among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weigh
North India							
Nair 2007	New Delhi	Rural	7	94	-	0.07 (0.03, 0.15)	5.87
Kumar 2013	Chandigarh	Combined	72	448		0.16 (0.13, 0.20)	6.21
Dube 2012	Rajasthan	Rural	8	38	-	0.21 (0.10, 0.37)	
Gupta 2001	Rajasthan	Urban	16	57	-	0.28 (0.17, 0.42)	5.62
Dube 2012	Rajasthan	Urban	20	68	-	0.29 (0.19, 0.42)	5.72
Gupta 2001	Rajasthan	Urban	42	77	-	0.55 (0.43, 0.66)	5.78
Subtotal (I^2 = 9)				0.25 (0.13, 0.38)	
East India							
Sarkar 2012	West Bengal	Rural	11	226	•	0.05 (0.02, 0.09)	6.12
Sudeshna 2012	_		18	80	-	0.22 (0.14, 0.33)	5.80
Subtotal (I^2 = 9	4.3%, p = 0.00)			\Diamond	0.12 (0.01, 0.34)	11.92
West India							
Verma 2011	Gujarat	Urban	11	656	•	0.02 (0.01, 0.03)	6.24
Dambhare 2012	Maharashtra	Combined	12	424	•	0.03 (0.01, 0.05)	6.21
Solanki 2012	Gujarat	Urban	3	58	•	0.05 (0.01, 0.14)	5.63
Sumana 2015	Gujarat	Urban	7	119		0.06 (0.02, 0.12)	5.96
Nemade 2009	Maharashtra	Urban	16	217	æ	0.07 (0.04, 0.12)	
Subtotal (I ² = 7	7.7%, p = 0.00)			o	0.04 (0.02, 0.07)	30.15
South India							
Anusree 2014	Karnataka	Urban	7	53	-	0.13 (0.05, 0.25)	5.57
Ade 2013	Karnataka	Rural	8	55	*	0.15 (0.06, 0.27)	5.60
Omidvar 2010	Karnataka	Urban	44	217	-	0.20 (0.15, 0.26)	6.11
Jothy 2012	Tamil Nadu	Rural	87	237	-	0.37 (0.31, 0.43)	
Subtotal (I^2 = 8	8.3%, p = 0.00)			\Diamond	0.21 (0.11, 0.33)	
Heterogeneity be	tween groups:	p = 0.454					
Overall (I^2 = 96		•			 	0.15 (0.09, 0.22)	100.00

Figure S3.7: Health workers as source of awareness of menarche among adolescent girls by region, studies published in India between 2000 and 2015

Author &								%
publication year	State	Setting	Number	Sample			Proportion (95% CI)	Weight
Nair 2007	New Delhi	Rural	1	94	-		0.01 (0.00, 0.06)	25.23
Nagamani 2014	Andhra Pradesh	Slum	2	36	-		0.06 (0.01, 0.19)	24.75
Thakur 2014	Maharashtra	Urban	4	56	-		0.07 (0.02, 0.17)	25.02
Anusree 2014	Karnataka	Urban	44	53			0.83 (0.70, 0.92)	25.00
Overall (I^2 = 98.0	0%, p < 0.001)					>	0.18 (0.00, 0.63)	100.00
					0 .25	.5 .75	1	

Figure S3.8: Knowledge of uterus as source of blood during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

ublication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weig
lorth India					!		
ain 2012	Rajasthan	Rural	2	161		0.01 (0.00, 0.04)	2.31
rora 2013	Haryana	Rural	10	200	-	0.05 (0.02, 0.09)	2.32
Mehta 2013	New Delhi	Slum	16	200	-	0.08 (0.05, 0.13)	2.32
Singh 2013	Uttarakhand	Rural	64	200	-	0.32 (0.26, 0.39)	2.32
atavegar 2014	New Delhi	Urban	150	440	<u>-</u>	0.34 (0.30, 0.39)	2.34
Aisra 2013	Harvana	Rural	580	995		0.58 (0.55, 0.61)	2.35
Subtotal (I^2 = 99.2%, p =		Kulai	300	883		0.19 (0.04, 0.42)	13.95
Central India							
l. 2012 Sonebhadra	Uttar Pradesh	Rural	62	600	l mari	0.10 (0.08, 0.13)	2.34
l. 2012 Jaunpur	Uttar Pradesh	Rural	74	600	1 % i	0.12 (0.10, 0.15)	2.34
l. 2012 Saunpur I. 2012 Mirzapur	Uttar Pradesh	Rural	84	600	1 1		2.34
	Uttar Pradesh	Combined	219	504		0.14 (0.11, 0.17)	2.34
Singh 2006 Subtotal (1^2 = 98.6%, p =		Combined	218	304		0.43 (0.39, 0.48) 0.19 (0.07, 0.34)	9.37
	-						
ast India	West Person	Urban	4	68	<u>_</u>	0.04 (0.00 0.00	2.24
atta 2012	West Bengal		1		≅ ।	0.01 (0.00, 0.08)	
asgupta 2008	West Bengal	Rural	4	160	F	0.03 (0.01, 0.06)	2.31
arkar 2012	West Bengal	Rural	46	510		0.09 (0.07, 0.12)	2.34
atta 2012	West Bengal	Rural	8	87		0.09 (0.04, 0.17)	2.27
I. 2013 East Singhbhum	Jharkand	Rural	55	600	•	0.09 (0.07, 0.12)	2.34
l. 2013 Gumla	Jharkand	Rural	76	600	•	0.13 (0.10, 0.16)	2.34
Gudeshna 2012	West Bengal	Rural	34	190		0.18 (0.13, 0.24)	2.31
l. 2013 Vaishali	Bihar	Rural	166	600	-	0.28 (0.24, 0.31)	2.34
Shattacherjee 2013	West Bengal	Slum	233	798		0.29 (0.26, 0.32)	2.35
Cumar 2015 IMG	Bihar	Rural	80	200	-	0.40 (0.33, 0.47)	2.32
andit 2014	West Bengal	Rural	178	435	-	0.41 (0.36, 0.46)	2.34
L 2013 Nalanda	Bihar	Rural	256	600	-	0.43 (0.39, 0.47)	2.34
hamima 2013	West Bengal	Urban	93	147		0.63 (0.55, 0.71)	2.30
Subtotal (I^2 = 98.2%, p =		Orban	-		♦	0.21 (0.13, 0.30)	30.15
Vest India							
hakre 2011	Maharashtra	Combined	10	387	•	0.03 (0.01, 0.05)	2.34
euva 2014	Gujarat	Urban	6	128	-	0.05 (0.02, 0.10)	2.30
euva 2014	Gujarat	Rural	9	128	-	0.07 (0.03, 0.13)	2.30
(ale Kalpana 2014	Maharashtra	Rural	14	178	-	0.08 (0.04, 0.13)	2.31
shah 2013	Gujarat	Rural	20	164	7-1	0.12 (0.08, 0.18)	2.31
Sobhate 2011	Maharashtra	Slum	35	241	-	0.15 (0.10, 0.20)	2.32
		Rural	42	288	=		2.33
atle 2013	Maharashtra					0.15 (0.11, 0.19)	
atle 2013	Maharashtra	Urban	60	295		0.20 (0.16, 0.25)	2.33
rerana 2015 Subtotal (I^2 = 99.2%, p =	Maharashtra 0.00)	Rural	301	350	◆	0.86 (0.82, 0.89) 0.16 (0.03, 0.37)	2.33
	,						
outh India					L !		
hanbhag 2012	Kamataka	Rural	15	506	P !	0.03 (0.02, 0.05)	2.34
othy 2012	Tamil Nadu	Rural	42	330	*	0.13 (0.09, 0.17)	2.33
Camath 2013	Kamataka	Urban	52	270	*	0.19 (0.15, 0.24)	2.33
Camath 2013	Kamataka	Rural	61	280	* ·	0.22 (0.17, 0.27)	2.33
okhrel 2014	Kamataka	Urban	90	303	-	0.30 (0.25, 0.35)	2.33
Barathalakshmi 2014	Tamil Nadu	Urban	133	435	★	0.31 (0.26, 0.35)	2.34
larayan 2001	Pondicherry	Combined	206	619	*	0.33 (0.30, 0.37)	2.34
(han 2012	Kamataka	Rural	72	199	*	0.36 (0.30, 0.43)	2.32
mirtha 2013	Pondicherry	Urban	124	325	*	0.38 (0.33, 0.44)	2.33
reeti 2015	Telangana	Urban	390	640	-	0.61 (0.57, 0.65)	2.34
Jugani 2015	Kamataka	Urban	389	400		0.97 (0.95, 0.99)	2.34
Subtotal (I^2 = 99.4%, p =		Olban	500	400		0.34 (0.17, 0.54)	25.6
leterogeneity between gro						0.22 (0.48 0.20)	100
Overall (I^2 = 99.08%, p =	0.00);				Ψ	0.23 (0.16, 0.30)	100.0

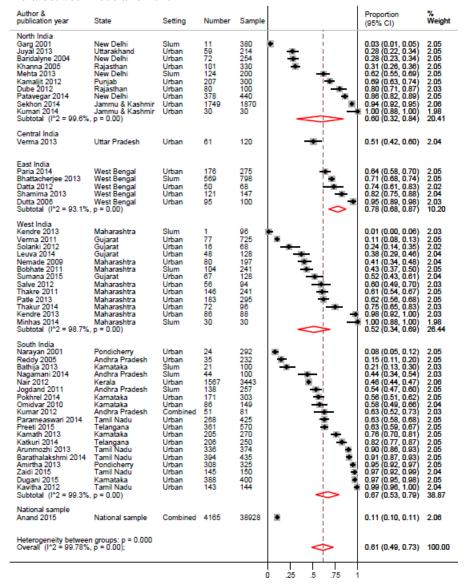
Figure S3.9: Menstruation as a normal phenomenon among adolescent girls by region, studies published in India between 2000 and 2015

State	Setting	Number	Sample		Proportion (95% CI)	% Weight
Haryana Jammu & Kashmir Agaisshan Rajasshan Rajasshan Rajasshan Rajasshan Rajasshan Punjab Uttarakhand Rajasshan Haryana New Delhi Punjab Haryana Haryana Haryana Haryana	Rural Urban Rural Rural Sium Urban Urban Urban Urban Urban Rural Urban Urban Urban Urban Urban Urban Urban Urban	55 13 26 49 40 40 81 141 87 141 107 60 289 224 626 197	995 200 200 281 100 330 180 180 273 200 478 440 300 788 200	\	0.06 (0.04, 0.07) 0.06 (0.04, 0.11) 0.13 (0.09, 0.18) 0.17 (0.13, 0.22) 0.40 (0.30, 0.50) 0.41 (0.34, 0.48) 0.48 (0.41, 0.58) 0.51 (0.43, 0.58) 0.52 (0.46, 0.58) 0.52 (0.46, 0.61) 0.60 (0.56, 0.65) 0.67 (0.62, 0.71) 0.74 (0.68, 0.79) 0.79 (0.76, 0.82) 0.99 (0.96, 1.00) 0.47 (0.31, 0.64)	1.87 1.85 1.86 1.83 1.86 1.85 1.85 1.85 1.85 1.86 1.85 1.86 1.85 1.86 1.86 1.86 1.85 1.86 1.85
Uttar Pradesh	Urban	103	120	*	0.86 (0.78, 0.92)	1.84
West Bengal West Bengal Meghalaya West Bengal West Bengal	Rural Urban Rural Slum Rural Slum Rural Urban Rural Urban Rural Rural	49 67 30 177 328 47 114 41 140 107 370 138	266 275 100 510 798 87 190 68 200 147 435 160	······································	0.18 (0.14, 0.24) 0.24 (0.19, 0.30) 0.30 (0.21, 0.40) 0.35 (0.31, 0.39) 0.41 (0.38, 0.45) 0.54 (0.43, 0.65) 0.60 (0.53, 0.67) 0.60 (0.58, 0.67) 0.73 (0.65, 0.72) 0.73 (0.65, 0.80) 0.85 (0.81, 0.88) 0.86 (0.80, 0.91) 0.53 (0.39, 0.68)	1.86 1.86 1.83 1.87 1.87 1.82 1.85 1.81 1.85 1.84 1.86 1.85 22.17
Maharashtra Gujarat Maharashtra Gujarat Gujarat Maharashtra Maharashtra Maharashtra Maharashtra p = 0.00)	Combined Combined Rural Rural Urban Rural Slum Rural Urban	71 237 37 53 69 201 154 234 286	387 763 100 128 128 350 241 288 295	+	0.18 (0.15, 0.23) 0.31 (0.28, 0.34) 0.37 (0.28, 0.47) 0.41 (0.33, 0.50) 0.54 (0.45, 0.63) 0.64 (0.57, 0.70) 0.81 (0.76, 0.88) 0.97 (0.94, 0.99) 0.55 (0.35, 0.75)	1.86 1.87 1.83 1.84 1.86 1.86 1.86 1.86 1.86
Kamataka Kamataka Kamataka Tamil Nadu Andhra Pradesh Tamil Nadu Pondicherry Kamataka Kamataka Telangana Kamataka Tamil Nadu Tamil Nadu Kamataka Kamataka Kamataka Kamataka Kamataka	Rural Slum Urban Rural Urban Rural Urban Urban Rural Urban Rural Urban Rural Urban Rural	51 42 25 114 157 63 215 193 195 184 373 282 357 381 80	242 199 100 425 400 325 280 270 250 508 330 3375 400 61	**	0.21 (0.16, 0.27) 0.21 (0.16, 0.27) 0.25 (0.17, 0.35) 0.27 (0.23, 0.31) 0.39 (0.34, 0.44) 0.42 (0.34, 0.50) 0.66 (0.61, 0.71) 0.99 (0.63, 0.74) 0.72 (0.66, 0.77) 0.74 (0.70, 0.78) 0.85 (0.81, 0.89) 0.95 (0.93, 0.97) 0.86 (0.81, 0.89) 0.95 (0.93, 0.97) 0.86 (0.81, 0.97) 0.86 (0.81, 0.97) 0.86 (0.81, 0.97)	1.86 1.85 1.86 1.86 1.86 1.86 1.86 1.86 1.86 1.86
	Haryana Jammu & Kashmir Jammu & Kashmir Rajashan Rajashan Rajashan Rajashan Rajashan Rajashan Rajashan Rajashan Punjab Uttarakhand Rajashan Punjab Uttarakhand Rajashan Haryana New Delhi Punjab Haryana Haryana Haryana Pen 0.00) Uttar Pradesh West Bengal Wes	Haryana Jammu & Kashmir Jammu & Kashmir Jammu & Kashmir Rajashhan Rajashan Rajashan Rajashan Rajashan Rajashan Rajashan Urban Punjab Urban Haryana Haryana Haryana Haryana Haryana Haryana Haryana Haryana Rural West Bengal West Be	Haryana Jammu & Kashmir Jammu & Kashmir Urban 13 Jammu & Kashmir Rural 26 Rajasthan Rural 40 Rajasthan Rural 40 Rajasthan Urban 41 Rajasthan Urban 41 Urban 42 Urban 42 Urban 42 Urban 42 Urban 43 Urban 42 Urban 43 Urban 44 Urban 44 Urban 44 Urban 45 Urban 45 Urban 46 Urban 47 Urban 47 Urban 48 Urban 49 Urban 47 Urban 47 Urban 47 Urban 48 Urban 47 Urban 48 Urban 47 Urban 48 Urban 49 Urban 47 Urban 48 Urban 47 Urban 48 Urban 47 Urban 48 Urban 47 Urban 48 Urban 48 Urban 49 Urban 47 Urban 48 Urban 47 Urban 48 Urban 49 Urban 41 Urban 42 Urban 42 Urban 43 Urban 44 Urban 44 Urban 45 Urban 45 Urban 46 Urban 47 Urban 48 Urban	Haryana Jammu & Kashmir Jammu & Kashmir Jammu & Kashmir Jammu & Kashmir Rural 26 200 Rural 27 200 Rajasthan Urban 87 180 Rajasthan Urban 141 330 Rajasthan Urban 141 273 Ultarakhand Rural 107 200 Rajasthan Urban 107 200 Rajasthan Urban 289 478 Rural 278 440	Haryana	State

Figure S3.10a: Use of menstrual pads among adolescent girls in the rural setting by region, studies published in India between 2000 and 2015

Author & publication year	State	Number	Sample		Proportion (95% CI)	% Weight
North India Jain 2012 Khanna 2005 Dube 2012 Nair 2007 Misra 2013 Arora 2013 Singh 2013 Kumari 2014 Juyal 2013 Subtotal (I*2 = 96.7%, p = 0	Rajasthan Rajasthan Rajasthan New Delhi Haryana Haryana Uttarakhand Jammu & Kashmir Uttarakhand	7 18 14 30 287 70 76 14	161 281 100 127 995 200 200 30 239	0	0.04 (0.02, 0.09) 0.06 (0.04, 0.10) 0.14 (0.08, 0.22) 0.24 (0.17, 0.32) 0.29 (0.26, 0.32) 0.35 (0.28, 0.42) 0.38 (0.31, 0.45) 0.47 (0.28, 0.66) 0.48 (0.42, 0.55) 0.25 (0.15, 0.36)	1.78 1.80 1.76 1.77 1.82 1.79 1.79 1.62 1.80 15.95
Central India N. 2012 Sonebhadra N. 2012 Mirzapur N. 2012 Jaunpur Katiyar 2013 Subtotal (1*2 = 98.8%, p = 0	Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh .00)	53 87 87 170	600 600 600 308	*	0.09 (0.07, 0.11) 0.14 (0.12, 0.18) 0.14 (0.12, 0.18) 0.55 (0.49, 0.61) 0.21 (0.08, 0.39)	1.82 1.82 1.82 1.80 7.25
East India Dutta 2006 Dasgupta 2008 N. 2013 Nalanda Sudeshna 2012 Sarkar 2012 N. 2013 Vaishali N. 2013 Gumla N. 2013 Gumla N. 2013 Gumla Lalbiaknungi 2015 Pana 2014 Datta 2012 Nagar 2016 Kumar 2015 IMG Pandit 2014 Subtotal (I^2 = 98.6%, p = 0	West Bengal West Bengal Bhar West Bengal West Bengal Bhar Jharkand Jharkand West Bengal West Bengal West Bengal West Bengal West Bengal West Bengal West Bengal West Bengal Obar	4 18 68 25 70 115 145 164 36 120 40 68 140 312	100 160 600 190 510 600 600 600 88 266 87 100 200 435	\	0.04 (0.01, 0.10) 0.11 (0.07, 0.17) 0.11 (0.09, 0.14) 0.13 (0.09, 0.19) 0.14 (0.11, 0.17) 0.19 (0.16, 0.23) 0.24 (0.21, 0.28) 0.27 (0.24, 0.31) 0.42 (0.31, 0.35) 0.46 (0.39, 0.51) 0.46 (0.36, 0.57) 0.70 (0.46, 0.37, 0.76) 0.72 (0.77, 0.76) 0.72 (0.77, 0.76) 0.72 (0.77, 0.76) 0.31 (0.20, 0.43)	1.76 1.78 1.82 1.79 1.81 1.82 1.82 1.82 1.75 1.75 1.75 1.75 1.75 1.79 1.81 25.08
West India Shah 2013 Dongre 2007 Salve 2012 Bhudhagaonkar 2014 Mudey 2010 Leuva 2014 Thakre 2011 Kale Kalpana 2014 Avachat 2011 Patle 2013 Minhas 2014 Bodat 2013 Rana 2015 Shitole 2012 Prerana 2015 Sanotra 2013 Subtotal (I*2 = 99.0%, p = 0	Gujarat Maharashtra Maharashtra Maharashtra Maharashtra Gujarat Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Gujarat Maharashtra Gujarat Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra	1 14 6 15 47 28 45 55 33 125 14 299 244 114 298	164 271 93 100 128 146 178 81 288 30 622 400 176 350 323	\	0.01 (0.00 0.03) 0.05 (0.03 0.09) 0.05 (0.02 0.14) 0.15 (0.09 0.24) 0.16 (0.12 0.20) 0.22 (0.15 0.30) 0.31 (0.24 0.38) 0.41 (0.30 0.52) 0.43 (0.38 0.49) 0.47 (0.28 0.66) 0.48 (0.44 0.52) 0.61 (0.56 0.66) 0.65 (0.57 0.72) 0.85 (0.80 0.88) 0.86 (0.85 0.93) 0.86 (0.85 0.93)	1.79 1.80 1.75 1.76 1.80 1.77 1.78 1.79 1.80 1.62 1.81 1.81 1.81 1.81 28.45
South India Narayan 2001 Anuradha 2000 Rani 2014 Audinarayana 2005 Khan 2012 Jothy 2012 Ravishankar 2011 Borker 2014 Shanbhang 2012 Vidya 2013 Kamath 2013 Ade 2013 Anitha 2015 Subtotal (1"2 = 98.1%, p = 0	•	6 50 82 48 48 104 73 90 145 108 182 52 44	327 360 400 225 199 330 200 217 329 242 280 80 61	······································	0.02 (0.01, 0.04) 0.14 (0.10, 0.18) 0.20 (0.17, 0.25) 0.21 (0.16, 0.27) 0.24 (0.18, 0.31) 0.32 (0.27, 0.37) 0.37 (0.30, 0.44) 0.44 (0.39, 0.50) 0.45 (0.38, 0.51) 0.65 (0.59, 0.71) 0.65 (0.59, 0.71) 0.65 (0.59, 0.75) 0.65 (0.59, 0.75) 0.65 (0.59, 0.75) 0.65 (0.59, 0.75) 0.65 (0.59, 0.75)	1.81 1.81 1.80 1.79 1.81 1.79 1.80 1.81 1.80 1.80 1.74 1.72 23.28
Heterogeneity between grou Overall (1 ² = 98.65%, p = 0	ps: p = 0.960 i.00):				0.32 (0.25, 0.38)	100.00

Figure S3.10b: Use of menstrual pads among adolescent girls in settings other than rural by region, studies published in India between 2000 and 2015



Figure~S3.11a: Use of menstrual cloths among adolescent girls in rural settings by region, studies published in India between 2000 and 2015

Author & publication year	State	Number	Sample		Proportion (95% CI)	% Weight
North India Juyal 2013 Kumari 2014 Misra 2013 Singh 2013 Arora 2013 Nair 2007 Dube 2012 Jain 2012 Khanna 2005 Subtotal (I*2 = 97.2%, p = 1	Uttarakhand Jammu & Kashmir Haryana Uttarakhand Haryana New Delhi Rajasthan Rajasthan Rajasthan	104 14 582 124 130 95 86 143 259	239 30 995 200 200 127 100 161 281	*******	0.44 (0.37, 0.50) 0.47 (0.28, 0.66) 0.58 (0.55, 0.62) 0.62 (0.55, 0.69) 0.65 (0.58, 0.72) 0.75 (0.68, 0.82) 0.89 (0.83, 0.93) 0.92 (0.88, 0.95) 0.70 (0.58, 0.82)	1.83 1.67 1.85 1.82 1.82 1.81 1.79 1.82 1.83 16.23
Central India Katiyar 2013 N. 2012 Jaunpur N. 2012 Mirzapur N. 2012 Sonebhadra Subtotal (1^2 = 99.0%, p = 1	Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh 0.00)	113 481 501 541	308 600 600 600	\	0.37 (0.31, 0.42) 0.80 (0.77, 0.83) 0.83 (0.80, 0.86) 0.90 (0.87, 0.92) 0.75 (0.54, 0.91)	1.83 1.84 1.84 1.84 7.37
East India Pandit 2014 Kumar 2015 IMG Nagar 2010 Dasgupta 2008 Paria 2014 Sudeshna 2012 Laibiaknungi 2015 Sarkar 2012 N. 2013 East Singhbhum N. 2013 Gumla N. 2013 Nailanda Dutta 2006 Subtotal (I*2 = 98.6%, p =	West Bengal Bihar Meghalaya West Bengal West Bengal West Bengal West Bengal West Bengal Jharkand Jharkand Bihar Bihar West Bengal	100 48 32 78 146 119 56 356 421 438 482 515 96	435 200 100 160 266 190 86 510 600 600 600 100	*	0.23 (0.19, 0.27) 0.23 (0.17, 0.29) 0.32 (0.23, 0.42) 0.49 (0.41, 0.57) 0.55 (0.49, 0.61) 0.83 (0.55, 0.70) 0.65 (0.54, 0.75) 0.70 (0.66, 0.74) 0.70 (0.66, 0.74) 0.73 (0.69, 0.77) 0.80 (0.77, 0.83) 0.86 (0.83, 0.89) 0.86 (0.80, 0.99) 0.82 (0.49, 0.74)	1.84 1.82 1.79 1.82 1.83 1.82 1.78 1.84 1.84 1.84 1.84 1.84 1.79 23.72
West India Kanotra 2013 Prerana 2015 Shitole 2012 Rana 2015 Minhas 2014 Mudey 2010 Bodat 2013 Pale Kalpana 2014 Leuva 2014 Thakre 2011 Bhudhagaonkar 2014 Salve 2012 Dongre 2007 Shah 2013 Subtotal (I ² 2 = 99.0%, p = 1	Maharashtra Maharashtra Gujarat Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Gujarat Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Gujarat Maharashtra Gujarat	34 53 62 156 14 140 323 163 119 87 101 85 87 257 163	323 350 178 400 300 622 288 178 128 146 100 93 271 164	***	0.11 (0.07, 0.14) 0.15 (0.12, 0.19) 0.25 (0.28, 0.43) 0.39 (0.34, 0.44) 0.47 (0.41, 0.52) 0.52 (0.48, 0.56) 0.57 (0.51, 0.62) 0.67 (0.59, 0.74) 0.88 (0.59, 0.76) 0.99 (0.61, 0.77) 0.95 (0.76, 0.91) 0.94 (0.86, 0.98) 0.95 (0.91, 0.97) 0.95 (0.91, 0.97) 0.95 (0.91, 0.97) 0.96 (0.91, 0.97) 0.96 (0.91, 0.97) 0.96 (0.91, 0.97) 0.96 (0.91, 0.97)	1.84 1.84 1.82 1.84 1.67 1.83 1.82 1.81 1.79 1.79 1.79 1.83 1.82 27.17
South India Kamath 2013 Anitha 2015 Shanbhag 2012 Ade 2013 Borker 2014 Vidya 2013 Jothy 2012 Balasubramanian 2005 Khan 2012 Anuradha 2000 Audinarayana 2005 Rani 2014 Narayan 2001 Lakshmi 2013 Subtotal (P2 = 99.0%, p = I	-	13 4 1114 28 114 130 196 178 136 269 171 310 270 200	280 61 329 80 217 242 330 263 199 360 225 400 327 200	· · · · · · · · · · · · · · · · · · ·	0.05 (0.02, 0.08) 0.07 (0.02, 0.16) 0.35 (0.25, 0.46) 0.35 (0.25, 0.46) 0.35 (0.26, 0.59) 0.54 (0.47, 0.60) 0.59 (0.54, 0.65) 0.68 (0.62, 0.73) 0.68 (0.61, 0.75) 0.76 (0.70, 0.81) 0.77 (0.73, 0.82) 0.83 (0.78, 0.87) 1.00 (0.98, 1.00) 0.58 (0.41, 0.73)	1.83 1.76 1.84 1.78 1.83 1.83 1.84 1.83 1.84 1.83 1.84 1.84 1.84 1.84 1.84 1.84 1.82 25.51
					0.63 (0.56, 0.70)	100.00

Figure S3.11b: Use of cloths among adolescent girls in settings other than rural by region, studies published in India between 2000 and 2015

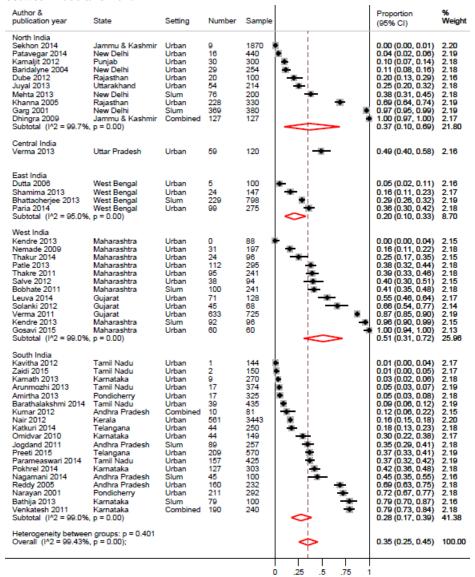


Figure S3.12: Use of the combination of cloths and pads among adolescent girls by region, studies published in India between 2000 and 2015

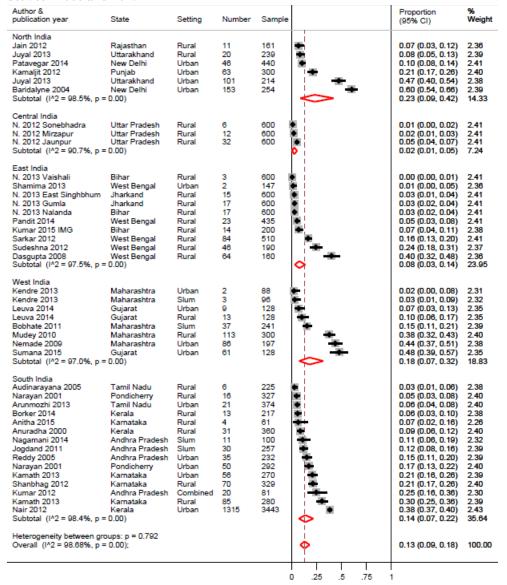


Figure S3.13: Use of routine waste for disposal of absorbent among adolescent girls by region, studies published in India between 2000 and 2015

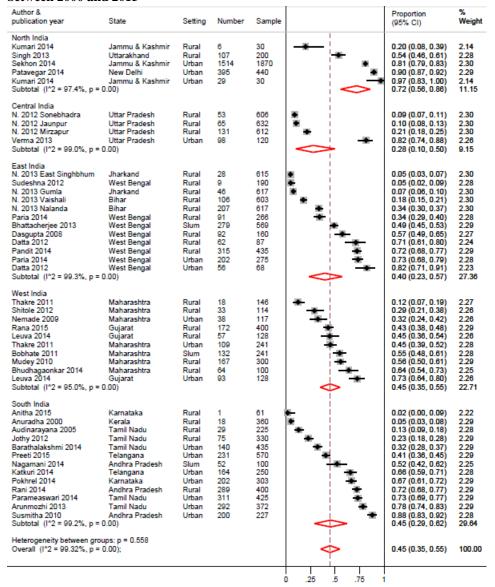


Figure S3.14: Use of burning for disposal of absorbent among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample	•	Proportion (95% CI)	% Weigh
North India					<u> </u>		
Patavegar 2014	New Delhi	Urban	25	440	•	0.06 (0.04, 0.08)	
Singh 2013	Uttarakhand	Rural	13	200	*	0.06 (0.04, 0.11)	
Sekhon 2014	Jammu & Kashmir		257	1870	•	0.14 (0.12, 0.15)	
Kumari 2014	Jammu & Kashmir	Rural	6	30		0.20 (0.08, 0.39)	3.09
Subtotal (I^2 = 91.4%, p =	= 0.00)				◇ i	0.10 (0.05, 0.16)	12.80
Central India							
N. 2012 Jaunpur	Uttar Pradesh	Rural	0	632	*	0.00 (0.00, 0.01)	3.24
N. 2012 Mirzapur	Uttar Pradesh	Rural	13	612	•	0.02 (0.01, 0.04)	3.24
N. 2012 Sonebhadra	Uttar Pradesh	Rural	85	606	. ■	0.14 (0.11, 0.17)	3.24
Subtotal (I^2 = 98.8%, p =	= 0.00)				⊘ i	0.03 (0.00, 0.15)	9.72
East India					i		
N. 2013 Gumla	Jharkand	Rural	0	617	•	0.00 (0.00, 0.01)	3.24
N. 2013 Vaishali	Bihar	Rural	0	603		0.00 (0.00, 0.01)	3.24
N. 2013 Nalanda	Bihar	Rural	1	617		0.00 (0.00, 0.01)	3.24
N. 2013 East Singhbhum	Jharkand	Rural	1	615	•	0.00 (0.00, 0.01)	3.24
Pandit 2014	West Bengal	Rural	2	435	•	0.00 (0.00, 0.02)	3.24
Paria 2014	West Bengal	Urban	10	275	•	0.04 (0.02, 0.07)	
Paria 2014	West Bengal	Rural	36	266	*	0.14 (0.10, 0.18)	
Subtotal (I^2 = 95.5%, p =)]	0.01 (0.00, 0.03)	
West India							
Mudey 2010	Maharashtra	Rural	3	300	•	0.01 (0.00, 0.03)	3.23
Rana 2015	Guiarat	Rural	68	400	Γ •	0.17 (0.13, 0.21)	
Thakre 2011	Maharashtra	Urban	113	241	T -	0.47 (0.40, 0.53)	
Shitole 2012	Maharashtra	Rural	57	114	-	0.50 (0.40, 0.60)	
Nemade 2009	Maharashtra	Urban	60	117	-	0.51 (0.42, 0.61)	
Thakre 2011	Maharashtra	Rural	89	146	-	0.61 (0.53, 0.69)	
Prerana 2015	Maharashtra	Rural	220	296	- -	0.74 (0.69, 0.79)	
Subtotal (I^2 = 99.1%, p =	= 0.00)					0.40 (0.17, 0.66)	
South India					1 !		
Katkuri 2014	Telangana	Urban	9	250	•	0.04 (0.02, 0.07)	3.23
Barathalakshmi 2014	Tamil Nadu	Urban	85	435	F *	0.20 (0.16, 0.24)	
Pokhrel 2014	Karnataka	Urban	60	303	 	0.20 (0.15, 0.25)	
Anuradha 2000	Kerala	Rural	72	360	-	0.20 (0.16, 0.25)	
Jothy 2012	Tamil Nadu	Rural	69	330	-	0.21 (0.17, 0.26)	
Lakshmi 2013	Andhra Pradesh	Rural	45	200	-	0.22 (0.17, 0.29)	
Rani 2014	Andhra Pradesh	Rural	111	400	-	0.28 (0.23, 0.32)	
Audinaravana 2005	Tamil Nadu	Rural	103	225	T -	0.46 (0.39, 0.53)	
Anitha 2015	Karnataka	Rural	36	61		0.59 (0.46, 0.71)	
Nair 2012	Kerala	Urban	2617	3443		0.76 (0.75, 0.77)	
Subtotal (I^2 = 99.6%, p =				32		0.30 (0.12, 0.52)	
Heterogeneity between gr	oups: p = 0.539						
Overall (I^2 = 99.67%, p :					♦	0.17 (0.08, 0.29)	100.0

Figure S3.15: Use of burying for disposal of absorbent among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weight
West India Shitole 2012 Nemade 2009 Rana 2015 Leuva 2014 Leuva 2014 Subtotal (1^2 = 92.7%, p	Maharashtra Maharashtra Gujarat Gujarat Gujarat = 0.00)	Rural Urban Rural Urban Rural	3 4 14 14 33	114 117 400 128 128	*	0.03 (0.01, 0.07) 0.03 (0.01, 0.09) 0.04 (0.02, 0.06) 0.11 (0.06, 0.18) 0.26 (0.18, 0.34) 0.08 (0.02, 0.16)	4.12 4.20 4.13 4.13
North India	- 0.00)					0.00 (0.02, 0.10)	20.71
Sekhon 2014 Kumari 2014 Subtotal (I^2 = 93.9%, p	Jammu & Kashmir Jammu & Kashmir = 0.00)		87 9	1870 30		0.05 (0.04, 0.06) 0.30 (0.15, 0.49) 0.14 (0.00, 0.47)	3.82
South India Katkuri 2014 Anuradha 2000 Nair 2012 Jothy 2012 Preeti 2015 Lakshmi 2013 Barathalakshmi 2014 Subtotal (I^2 = 97.9%, p	Telangana Kerala Kerala Tamil Nadu Telangana Andhra Pradesh Tamil Nadu = 0.00)	Urban Rural Urban Rural Urban Rural Urban	14 27 379 82 146 68 148	250 360 3443 330 570 200 435	\	0.06 (0.03, 0.09) 0.08 (0.05, 0.11) 0.11 (0.10, 0.12) 0.25 (0.20, 0.30) 0.26 (0.22, 0.29) 0.34 (0.27, 0.41) 0.34 (0.30, 0.39) 0.19 (0.11, 0.28)	4.20 4.23 4.20 4.21 4.17 4.21
East India Datta 2012 Pandit 2014 Datta 2012 N. 2013 East Singhbhum N. 2013 Nalanda N. 2013 Gumla N. 2013 Vaishali Subtotal (I^2 = 98.6%, p	Bihar Jharkand Bihar	Urban Rural Rural Rural Rural Rural Rural	7 91 20 306 348 406 436	68 435 87 615 617 617 603	\	0.10 (0.04, 0.20) 0.21 (0.17, 0.25) 0.23 (0.15, 0.33) 0.50 (0.46, 0.54) 0.56 (0.52, 0.60) 0.66 (0.62, 0.70) 0.72 (0.69, 0.76) 0.42 (0.27, 0.58)	4.21 4.08 4.22 4.22 4.22 4.22
Central India N. 2012 Mirzapur N. 2012 Sonebhadra N. 2012 Jaunpur Subtotal (1^2 = 0.0%, p =	Uttar Pradesh Uttar Pradesh Uttar Pradesh : 0.46)	Rural Rural Rural	286 289 317	612 606 632	•	0.47 (0.43, 0.51) 0.48 (0.44, 0.52) 0.50 (0.46, 0.54) 0.48 (0.46, 0.50)	4.22 4.22
Heterogeneity between g Overall (I^2 = 99.35%, p					♦	0.25 (0.16, 0.35)	100.00

Figure S3.16: "Throwing away" of the absorbent as way of disposal among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weight
West India Thakre 2011 Nemade 2009 Bobhate 2011 Thakre 2011 Gosavi 2015 Subtotal (1^2 = 98.7%, p =	Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra = 0.00)	Urban Urban Slum Rural Urban	19 15 35 39 60	241 117 241 146 60	*	0.08 (0.05, 0.12) 0.13 (0.07, 0.20) 0.15 (0.10, 0.20) 0.27 (0.20, 0.35) 1.00 (0.94, 1.00) 0.33 (0.09, 0.64)	2.91 2.96 2.93 2.82
North India Kumari 2014 Singh 2013 Subtotal (I^2 = 3.1%, p =	Jammu & Kashmir Uttarakhand 0.31)	Rural Rural	9 80	30 200		0.30 (0.15, 0.49) 0.40 (0.33, 0.47) 0.38 (0.32, 0.45)	2.95
South India Nair 2012 Arunmozhi 2013 Anuradha 2000 Anitha 2015 Katkuri 2014 Parameaswari 2014 Susmitha 2010 Pokhrel 2014 Barathalakshmi 2014 Jothy 2012 Audinarayana 2005 Lakshmi 2013 Nagamani 2014 Subtotal (1*2 = 98.6%, p =	Kerala Tamil Nadu Kerala Karnataka Telangana Tamil Nadu Andhra Pradesh Karnataka Tamil Nadu Tamil Nadu Tamil Nadu Andhra Pradesh Andhra Pradesh Andhra Pradesh E 0.00)	Urban Urban Rural Rural Urban Urban Urban Urban Urban Rural Rural Rural Sium	93 17 23 5 22 41 27 36 62 128 93 87 48	3443 372 360 61 250 425 227 303 435 330 225 200 100	*	0.03 (0.02, 0.03) 0.05 (0.03, 0.07) 0.06 (0.04, 0.09) 0.08 (0.03, 0.18) 0.09 (0.06, 0.13) 0.10 (0.07, 0.13) 0.12 (0.08, 0.16) 0.12 (0.08, 0.16) 0.14 (0.11, 0.18) 0.39 (0.34, 0.44) 0.41 (0.35, 0.48) 0.44 (0.37, 0.51) 0.48 (0.38, 0.58) 0.17 (0.09, 0.26)	2.98 2.97 2.83 2.96 2.98 2.96 2.97 2.98 2.97 2.98 2.97 2.96 2.95 2.89
East India Datta 2012 Datta 2012 Pandit 2014 N. 2013 Gumla N. 2013 Vaishali Paria 2014 N. 2013 Nalanda N. 2013 East Singhbhum Paria 2014 Sudeshna 2012 Subtotal (1^2 = 99.1%, p =	West Bengal West Bengal	Rural Urban Rural Rural Rural Urban Rural Rural Rural Rural	1 1 27 95 95 63 243 298 139 177	87 68 435 617 603 275 617 615 266 190	\	0.01 (0.00, 0.06) 0.01 (0.00, 0.08) 0.06 (0.04, 0.09) 0.15 (0.13, 0.18) 0.16 (0.13, 0.19) 0.23 (0.18, 0.28) 0.39 (0.36, 0.43) 0.48 (0.44, 0.52) 0.52 (0.46, 0.58) 0.93 (0.89, 0.96) 0.26 (0.13, 0.43)	2.84 2.98 2.99 2.99 2.96 2.99 2.99 2.96 2.95
Central India N. 2012 Jaunpur Verma 2013 N. 2012 Mirzapur N. 2012 Sonebhadra Subtotal (I^2 = 98.1%, p =	Uttar Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh = 0.00)	Rural Urban Rural Rural	42 22 166 188	632 120 612 606	\	0.07 (0.05, 0.09) 0.18 (0.12, 0.26) 0.27 (0.24, 0.31) 0.31 (0.27, 0.35) 0.20 (0.08, 0.35)	2.91 2.99 2.99
Heterogeneity between gr Overall (I^2 = 98.96%, p =					25 5 75 1	0.23 (0.16, 0.31)	100.00

Figure S3.17: "Throwing in toilet" of the absorbent as way of disposal among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample	9		Proportion (95% CI)	% Weight
West India								
Rana 2015	Gujarat	Rural	2	400	•		0.00 (0.00, 0.02)	6.05
Leuva 2014	Gujarat	Rural	4	128			0.03 (0.01, 0.08)	5.84
Leuva 2014	Gujarat	Urban	9	128	*		0.07 (0.03, 0.13)	5.84
Mudey 2010	Maharashtra	Rural	39	300	•		0.13 (0.09, 0.17)	6.01
Subtotal (I^2 = 95.1)	%, p = 0.00)				\Diamond		0.05 (0.00, 0.13)	23.74
North India								
Sekhon 2014	Jammu & Kashmir		12	1870	•		0.01 (0.00, 0.01)	
Kumari 2014	Jammu & Kashmir	Urban	1	30	-		0.03 (0.00, 0.17)	
Patavegar 2014	New Delhi	Urban	20	440	•		0.05 (0.03, 0.07)	
Subtotal (I^2 = 92.8)	%, p = 0.00)				P		0.02 (0.00, 0.07)	17.22
South India					j			
Pokhrel 2014	Karnataka	Urban	5	303	•		0.02 (0.01, 0.04)	6.01
Nair 2012	Kerala	Urban	272	3443	•		0.08 (0.07, 0.09)	6.14
Anitha 2015	Karnataka	Rural	7	61	-		0.11 (0.05, 0.22)	5.54
Katkuri 2014	Telangana	Urban	41	250			0.16 (0.12, 0.22)	5.99
Arunmozhi 2013	Tamil Nadu	Urban	63	372	-		0.17 (0.13, 0.21)	6.04
Parameaswari 2014	Tamil Nadu	Urban	73	425	•		0.17 (0.14, 0.21)	6.05
Anuradha 2000	Kerala	Rural	221	360	11	*	0.61 (0.56, 0.66)	6.03
Subtotal (I^2 = 99.0	%, p = 0.00)						0.17 (0.06, 0.31)	41.80
East India								
Sudeshna 2012	West Bengal	Rural	4	190			0.02 (0.01, 0.05)	5.94
Datta 2012	West Bengal	Rural	4	87	-		0.05 (0.01, 0.11)	5.71
Datta 2012	West Bengal	Urban	4	68	-		0.06 (0.02, 0.14)	5.60
Subtotal (I^2 = 27.1	%, p = 0.25)				⊘ į		0.03 (0.01, 0.06)	17.24
Heterogeneity betwe		4						
Overall (I^2 = 98.48	%, p = 0.00);				•		0.08 (0.04, 0.14)	100.00
					+			
					0 .25	.5 .75 1		

Figure~S3.18: Daily bath during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample			Proportion (95% CI)	% Weight
North India								
Dhingra 2009	Jammu & Kashmir	Combined	4	200	٠.	i	0.02 (0.01, 0.05)	2.56
Singh 2013	Uttarakhand	Rural	10	200	•		0.05 (0.02, 0.09)	2.56
Juyal 2013	Uttarakhand	Rural	138	239			0.58 (0.51, 0.64)	2.56
Juyal 2013	Uttarakhand	Urban	150	214			0.70 (0.63, 0.76)	2.56
Arora 2013	Haryana	Rural	182	200			0.91 (0.86, 0.95)	2.56
Goel 2011	Haryana	Urban	444	478		•	0.93 (0.90, 0.95)	2.58
Patavegar 2014	New Delhi	Urban	430	440			0.98 (0.96, 0.99)	2.57
Misra 2013 Subtotal (I ² = 99.7%, p =	Haryana 0.00)	Rural	986	995			0.99 (0.98, 1.00) 0.67 (0.35, 0.92)	2.58 20.53
Central India						i		
Kushwah 2007	Madhya Pradesh	Rural	178	199		-	0.89 (0.84, 0.93)	2.56
N. 2012 Sonebhadra	Uttar Pradesh	Rural	558	600			0.93 (0.91, 0.95)	2.58
N. 2012 Mirzapur	Uttar Pradesh	Rural	558	600		•	0.93 (0.91, 0.95)	2.58
N. 2012 Jaunpur	Uttar Pradesh	Rural	576	600			0.96 (0.94, 0.97)	2.58
Subtotal (I^2 = 75.7%, p =				-		0	0.93 (0.91, 0.95)	10.29
East India								
Bhattacherjee 2013	West Bengal	Slum	121	798	•	1	0.15 (0.13, 0.18)	2.58
N. 2013 Gumla	Jharkand	Rural	247	600		•	0.41 (0.37, 0.45)	2.58
N. 2013 Nalanda	Bihar	Rural	462	600			0.77 (0.73, 0.80)	2.58
Dutta 2006	West Bengal	Rural	80	100		-	0.80 (0.71, 0.87)	2.53
Shamima 2013	West Bengal	Urban	126	147		*	0.86 (0.79, 0.91)	2.55
N. 2013 Vaishali	Bihar	Rural	564	600		•	0.94 (0.92, 0.96)	2.58
N. 2013 East Singhbhum	Jharkand	Rural	570	600		•	0.95 (0.93, 0.97)	2.58
Sarkar 2012	West Bengal	Rural	494	510		•	0.97 (0.95, 0.98)	2.58
Dutta 2006	West Bengal	Urban	100	100			1.00 (0.96, 1.00)	2.53
Nagar 2010	Meghalaya	Rural	100	100			1.00 (0.96, 1.00)	2.53
Subtotal (I^2 = 99.6%, p =						\diamond	0.84 (0.61, 0.98)	25.61
West India								
Gosavi 2015	Maharashtra	Urban	30	60		-	0.50 (0.37, 0.63)	2.50
Nemade 2009	Maharashtra	Urban	192	197		•	0.97 (0.94, 0.99)	2.56
Patle 2013	Maharashtra	Urban	295	295			1.00 (0.99, 1.00)	2.57
Patle 2013	Maharashtra	Rural	288	288			1.00 (0.99, 1.00)	2.57
Subtotal (I^2 = 97.7%, p =	0.00)					₽	0.94 (0.79, 1.00)	10.19
South India				000		_	0.04 (0.07.0.40)	0.50
Lakshmi 2013	Andhra Pradesh	Rural	67	200	' ا	- _	0.34 (0.27, 0.40)	2.56
Jothy 2012	Tamil Nadu	Rural	175	330		★	0.53 (0.47, 0.59)	2.57
Vidya 2013	Kamataka	Rural	167	242			0.69 (0.63, 0.75)	2.56
Arunmozhi 2013	Tamil Nadu	Urban	257	375		*_	0.69 (0.64, 0.73)	2.57
Venkatesh 2011	Kamataka	Combined	185	240		T	0.77 (0.71, 0.82)	2.56
Shanbhag 2012	Kamataka	Rural	292	329		•	0.89 (0.85, 0.92)	2.57
Anuradha 2000	Kerala	Rural	346	360		•	0.96 (0.94, 0.98)	2.57
Dugani 2015	Kamataka	Urban	388	400		•	0.97 (0.95, 0.98)	2.57
Audinarayana 2005	Tamil Nadu	Rural	219	225		3	0.97 (0.94, 0.99)	2.56
Balasubramanian 2005	Tamil Nadu	Rural	256	263			0.97 (0.95, 0.99)	2.57
Nair 2012	Kerala	Urban	3360	3443			0.98 (0.97, 0.98)	2.59
Reddy 2005	Andhra Pradesh	Urban	228	232		i 🛢	0.98 (0.98, 1.00)	2.56
Borker 2014 Subtotal (I^2 = 99.0%, p =	Kerala 0.00)	Rural	215	217		\diamond	0.99 (0.97, 1.00) 0.87 (0.76, 0.95)	2.56 33.38
Heterogeneity between gro							•	
Overall (I^2 = 99.46%, p =						♦	0.84 (0.76, 0.91)	100.00
					L			

 $Figure~S3.19: \ Religious~restrictions~during~menstruation~among~adolescent~girls~by~region, studies~published~in~India~between~2000~and~2015$

ublication year	State	Setting	Number	Sample	Proportion (95% CI)	Wel
forth India				2500	_	
Purl 2006	Punjab	Rural	840		0.34 (0.32, 0.35)	1.52
Mahajan 2004 Puri 2006	Jammu & Kashmir Punjab	Urban Urban	81 1038	200 2500	0.41 (0.34, 0.48) 0.42 (0.40, 0.43)	1.50
run 2006 Mahajan 2004	Jammu & Kashmir	Rural	85	200	0.42 (0.40, 0.43)	1.50
ranajan 2004 Sekhon 2014		Urban	912	1870	0.43 (0.36, 0.50)	1.50
	Jammu & Kashmir	Rurai	122	1870 200	0.49 (0.46, 0.51)	1.50
vora 2013	Haryana				0.61 (0.54, 0.68)	
atavegar 2014	New Delhi	Urban	292	440	0.66 (0.62, 0.71)	1.51
amalit 2012	Punjab	Urban	216	300	0.72 (0.67, 0.77)	1.50
fehta 2013	New Delhi	Slum	148	200	0.74 (0.67, 0.80)	1.50
hanna 2005	Rajasthan	Rural	210	281	0.75 (0.69, 0.80)	1.50
ioel 2011	Haryana	Urban	364	478	0.76 (0.72, 0.80)	1.51
uyai 2013	Uttarakhand	Rural	198	239	0.83 (0.77, 0.87)	1.50
hanna 2005	Rajasthan	Urban	281	330	0.85 (0.81, 0.89)	1.51
air 2007	New Delhi	Rural	117	127	■ 0.92 (0.86, 0.96)	1.48
uyal 2013	Uttarakhand	Urban	198	214	 0.93 (0.88, 0.96) 	1.50
lisra 2013	Haryana	Rural	972	995	■ 0.98 (0.97, 0.99)	1.52
Ingh 2013	Uttarakhand	Rural	200	200	1.00 (0.98, 1.00)	1.50
aridalyne 2004	New Delhi	Urban	254	254	1.00 (0.99, 1.00)	1.50
tanhas 2015	Jammu & Kashmir	Urban	100	100	1.00 (0.55, 1.00)	1.47
ain 2012	Rajasthan	Rural	161	161	1.00 (0.96, 1.00) 1.00 (0.98, 1.00)	1.49
hingra 2009	Jammu & Kashmir	Combined	200	200	1.00 (0.98, 1.00)	1.50
ubtotal (I^2 = 99.5%, p = 1		Combined	200	200	0.81 (0.69, 0.90)	31.5
					2.51 (0.55, 0.56)	
Central India J. 2012 Mirzapur	Litter Sendant	Rural	375	600	0.63 (0.58, 0.66)	1.51
	Uttar Pradesh					
l. 2012 Jaunpur	Uttar Pradesh	Rural	398	600	0.66 (0.62, 0.70)	1.51
I. 2012 Sonebhadra	Uttar Pradesh	Rural	506	600	0.84 (0.81, 0.87) 0.72 (0.57, 0.84)	1.51
ubtotal (I^2 = 97.7%, p =	0.00)				0.72 (0.57, 0.84)	4.54
ast India					i	
albiaknungi 2015	West Bengal	Rural	36	86	0.42 (0.31, 0.53)	1.47
aria 2014	West Bengal	Urban	137	275	0.50 (0.44, 0.56)	1.50
atta 2012	West Bengal	Urban	31	58	0.53 (0.40, 0.67)	1.44
2013 Gumla	Jharkand	Rural	340	600	0.57 (0.53, 0.61)	1.51
arkar 2012	West Bengal	Rural	299	510		1.51
asgupta 2008	West Bengal	Rural	96	160	0.59 (0.54, 0.63) 0.60 (0.52, 0.68)	1.49
i. 2013 East Singhbhum	Jharkand	Rural	405	600	0.68 (0.64, 0.71)	1.51
andit 2014	West Bengal	Rural	310	435	0.68 (0.64, 0.71)	1.51
	West Bengal Rihar	Rural	445			
l. 2013 Valshall	West Bengal		199	600 266	0.74 (0.70, 0.78)	1.51
aria 2014		Rural			0.75 (0.69, 0.80)	
udeshna 2012	West Bengal	Rural	144	190	0.76 (0.69, 0.82)	1.50
latta 2012	West Bengal	Rural	54	70	0.77 (0.66, 0.86)	1.45
l. 2013 Nalanda	Bihar	Rural	469	600	 0.78 (0.75, 0.81) 	1.51
hamima 2013	West Bengal	Urban	133	147	0.90 (0.85, 0.95)	1.49
hattacherjee 2013	West Bengal	Slum	743	798	0.93 (0.91, 0.95)	1.51
Subtotal (I^2 = 97.4%, p = 0	0.00)				0.69 (0.61, 0.77)	22.4
Vest India					i_	
finhas 2014	Maharashtra	Rural	2	30	0.07 (0.01, 0.22)	1.37
finhas 2014	Maharashtra	Slum	3	30	0.10 (0.02, 0.27)	1.37
lana 2015	Gujarat	Rural	213	400	0.53 (0.48, 0.58)	1.51
hitole 2012	Maharashtra	Rural	97	176	0.55 (0.47, 0.63)	1.49
umana 2015	Gularat	Urban	80	128	0.63 (0.54, 0.71)	1.48
hakre 2011	Maharashtra	Urban	163	241	0.68 (0.61, 0.73)	1.50
hakre 2011	Maharashtra	Rural	107	145	0.73 (0.65, 0.80)	1.49
hakur 2014	Maharashtra	Urban	80	96	0.83 (0.74, 0.90)	1.47
euva 2014	Gujarat	Urban	108	128	0.83 (0.74, 0.90)	1.48
		Rurai				1.48
ludey 2010	Maharashtra		261	300	0.87 (0.83, 0.91)	
obhate 2011	Maharashtra	Slum	217	241	0.90 (0.86, 0.94)	1.50
ale Kalpana 2014	Maharashtra	Rural	161	178	0.90 (0.85, 0.94)	1.49
euva 2014	Gujarat	Rural	120	128	0.94 (0.88, 0.97)	1.48
iosavi 2015	Maharashtra	Urban	60	60	1.00 (0.94, 1.00)	1.44
lemade 2009	Maharashtra	Urban	197	197	 1.00 (0.98, 1.00) 	1.50
hudhagaonkar 2014	Maharashtra	Rural	100	100	 1.00 (0.96, 1.00) 	1.47
		-	•		0.77 (0.65, 0.88)	23.5
ubtotal (I^2 = 97.9%, p = 1					i	
				61	0.30 (0.19, 0.43)	1.44
Subtotal (I^2 = 97.9%, p = I	Kamataka	Russi		01	0.30 (0.19, 0.43)	1.51
outh India nitha 2015	Kamataka Tamii Nadu	Rural	18	375		
outh India nitha 2015 runmozhi 2013	Tamii Nadu	Urban	178	375 260		
outh India nitha 2015 runmozhi 2013 latkuri 2014	Tamii Nadu Telangana	Urban Urban	178 136	250	0.54 (0.48, 0.61)	1.50
outh India nitha 2015 runmozhi 2013 atkuri 2014 avitha 2012	Tamii Nadu Telangana Tamii Nadu	Urban Urban Urban	178 136 80	250 144	0.54 (0.48, 0.61) 0.56 (0.47, 0.64)	1.50
outh India nitha 2015 runmozhi 2013 atkuri 2014 avitha 2012 othy 2012	Tamii Nadu Telangana Tamii Nadu Tamii Nadu	Urban Urban Urban Rural	178 136 80 246	250 144 330	0.54 (0.48, 0.61) 0.56 (0.47, 0.64) 0.75 (0.69, 0.79)	1.50 1.49 1.51
iouth India initha 2015 runmozhi 2013 iatkuri 2014 iavitha 2012 optand 2011	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh	Urban Urban Urban Rural Sium	178 136 80 246 203	250 144 330 257	0.54 (0.48, 0.61) 0.56 (0.47, 0.64) 0.75 (0.69, 0.79) 0.79 (0.73, 0.84)	1.50 1.49 1.51 1.50
outh India nitha 2015 runmozhi 2013 latkuri 2014 lavitha 2012 othy 2012 ogdand 2011 lugani 2015	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka	Urban Urban Urban Rural Slum Urban	178 136 80 246 203 342	250 144 330 257 400	0.54 (0.48, 0.61) 0.56 (0.47, 0.64) 0.75 (0.69, 0.79) 0.79 (0.73, 0.84) 0.86 (0.82, 0.89)	1.50 1.45 1.51 1.50 1.51
iouth India nitha 2015 runmozhi 2013 atkuri 2014 iavitha 2012 othy 2012 ogdand 2011 iugani 2015 arameaswari 2014	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu	Urban Urban Urban Rural Sium Urban Urban	178 136 80 246 203 342 396	250 144 330 257 400 425	0.54 (0.48, 0.61) 0.56 (0.47, 0.64) 0.75 (0.59, 0.79) 0.79 (0.73, 0.84) 0.66 (0.82, 0.89) 0.93 (0.90, 0.95)	1.50 1.49 1.51 1.50 1.51
iouth India initha 2015 runmozhi 2013 istkuri 2014 iavitha 2012 othy 2012 ogdand 2011 lugani 2015 arameaswari 2014 hanbhag 2012	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu Kamataka	Urban Urban Urban Rural Slum Urban Urban Rural	178 136 80 246 203 342 396 310	250 144 330 257 400 425 329	0.54 (0.48, 0.51) 0.55 (0.47, 0.54) 0.75 (0.69, 0.79) 0.79 (0.73, 0.84) 0.86 (0.82, 0.89) 0.93 (0.90, 0.95) 0.94 (0.91, 0.96)	1.50 1.45 1.51 1.50 1.51 1.51
iouth India nitha 2015 runmozhi 2013 atkuri 2014 avitha 2012 otty 2012 ogdand 2011 ugani 2015 arameaswari 2014 hanbhag 2012 okhrel 2014	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu Kamataka Kamataka	Urban Urban Urban Rural Slum Urban Urban Rural Urban	178 136 80 246 203 342 396 310 298	250 144 330 257 400 425 329 303	0.54 (0.48, 0.61) 0.55 (0.47, 0.64) 0.75 (0.58, 0.79) 0.79 (0.73, 0.84) 0.86 (0.82, 0.89) 0.93 (0.90, 0.95) 0.94 (0.91, 0.96) 0.98 (0.95, 0.99)	1.50 1.49 1.51 1.51 1.51 1.51 1.51
iouth India nitha 2015 runmozhi 2013 atkuri 2014 avitha 2012 otty 2012 ogdand 2011 ugani 2015 arameaswari 2014 hanbhag 2012 okhrel 2014	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu Kamataka	Urban Urban Urban Rural Slum Urban Urban Rural	178 136 80 246 203 342 396 310	250 144 330 257 400 425 329	0.54 (0.48, 0.61) 0.55 (0.47, 0.64) 0.75 (0.58, 0.79) 0.79 (0.73, 0.84) 0.86 (0.82, 0.89) 0.93 (0.90, 0.95) 0.94 (0.91, 0.96) 0.98 (0.95, 0.99)	1.50 1.45 1.51 1.50 1.51 1.51
outh India nilha 2015 runmozh 2013 atkuri 2014 astkari 2012 othy 2012 ogdand 2011 ugani 2015 arameaswari 2014 hankhag 2012 okhrel 2014 arathalakkhni 2014	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu Kamataka Kamataka Tamii Nadu	Urban Urban Urban Rural Sium Urban Urban Rural Urban Urban Urban	178 136 80 246 203 342 396 310 298 429	250 144 330 257 400 425 329 303 435	0.54 (0.48, 0.51) 0.55 (0.47, 0.54) 0.75 (0.59, 0.79) 0.79 (0.73, 0.84) 1.05 (0.82, 0.89) 0.33 (0.90, 0.95) 1.04 (0.91, 0.95) 0.93 (0.97, 0.99) 0.99 (0.97, 0.99)	1.50 1.49 1.51 1.50 1.51 1.51 1.51
iouth India vilha 2015 runmozh 2013 atkuri 2014 aixitha 2012 othy 2012 opdand 2011 lugani 2015 trameaswari 2014 hanthag 2012 othrei 2014 de 2013	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu Kamataka Kamataka Tamii Nadu Kamataka	Urban Urban Urban Rural Slum Urban Urban Rural Urban	178 136 80 246 203 342 396 310 298	250 144 330 257 400 425 329 303	0.54 (0.48, 0.61) 0.55 (0.47, 0.64) 0.75 (0.58, 0.79) 0.79 (0.73, 0.84) 0.86 (0.82, 0.89) 0.93 (0.90, 0.95) 0.94 (0.91, 0.96) 0.98 (0.95, 0.99)	1.50 1.49 1.51 1.51 1.51 1.51 1.51
iouth India inliha 2015 inliha 2015 inliha 2015 inliha 2014 inliha 2014 inliha 2012 othy 2012 othy 2012 othy 2011 injiha 2015 inliha 2014	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Andhra Pradesh Karmataka Tamii Nadu Kamataka Kamataka Kamataka Tamii Nadu Kamataka Kamataka Tamii Nadu Kamataka	Urban Urban Urban Rural Sium Urban Urban Rural Urban Urban Urban	178 136 80 246 203 342 396 310 298 429	250 144 330 257 400 425 329 303 435	0.54 (0.48, 0.61) 0.55 (0.47, 0.64) 0.75 (0.59, 0.79) 1.79 (0.73, 0.84) 1.90 (0.85, 0.89) 1.90 (0.95) 1.91 (0.91, 0.95) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99)	1.50 1.45 1.51 1.51 1.51 1.51 1.51 1.51
outh India nitha 2015 nitha 2015 athurt 2014 athurt 2014 athurt 2014 othy 2012 othy 2012 remediated 2011 open 2015 athurt 2014 open 2015 other 2012 other 2014 de 2013 de 2019	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu Kamataka Tamii Nadu Kamataka Tamii Nadu Kamataka Tamii Nadu Kamataka O.00)	Urban Urban Urban Rural Sium Urban Urban Rural Urban Urban Urban	178 136 80 246 203 342 396 310 298 429	250 144 330 257 400 425 329 303 435	0.54 (0.48, 0.61) 0.55 (0.47, 0.64) 0.75 (0.56, 0.79) 0.79 (0.73, 0.84) 1 0.66 (0.82, 0.89) 1 0.30 (0.95, 0.95) 1 0.44 (0.91, 0.95) 1 0.90 (0.95, 0.99) 1 0.90 (0.95, 0.99)	1.50 1.40 1.50 1.50 1.50 1.50 1.50 1.50 1.40 17.5
outh India nitha 2015 nitha 2015 athur 2014 athur 2014 athur 2014 athur 2012 othy 2012 opgdand 2011 ugani 2015 arameasward 2014 hanbihag 2012 othrei 2014 arabhaiskahmi 2014 de 2013 ublotal (IA2 = 98.7%, p = I	Tamii Nadu Telangana Tamii Nadu Tamii Nadu Tamii Nadu Andhra Pradesh Kamataka Tamii Nadu Kamataka Tamii Nadu Kamataka Tamii Nadu Kamataka Tamii Nadu Kamataka O.00)	Urban Urban Urban Rural Sium Urban Urban Rural Urban Urban Urban	178 136 80 246 203 342 396 310 298 429	250 144 330 257 400 425 329 303 435	0.54 (0.48, 0.61) 0.55 (0.47, 0.64) 0.75 (0.59, 0.79) 1.79 (0.73, 0.84) 1.90 (0.85, 0.89) 1.90 (0.95) 1.91 (0.91, 0.95) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99) 1.93 (0.97, 0.99)	1.50 1.45 1.51 1.51 1.51 1.51 1.51 1.51

Figure S3.20: Food restrictions during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Mahajan 2004 Jar Juyal 2013 Goel 2011 Ha Goel 2011 Ha Kamajir 2012 Pu Juyal 2013 Utt Dube 2012 Ra Sekhon 2014 Jar Patavegar 2014 Ne Kumari 2014 Nair 2007 Ne Kumari 2014 Jar Nair 2007 Ra Manhas 2015 Subtotal (I'2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra N. 2012 Sonebhadra N. 2012 Sonebhadra N. 2012 Mirzapur Utt N. 2012 Jaunpur Utt N. 2012 Mirzapur Utt Sarkar 2012 We N. 2013 East Singhbhum Jarta 2014 N. 2013 Gumla Jih N. 2013 Gumla Jih Datta 2014 We Paria 2014 Bih	tar Pradesh tar Pradesh tar Pradesh 9)	Rural Urban Rural Urban Urban Urban Urban Urban Urban Rural	26 32 49 118 82 61 33 738 188 16 71 21 73 157 100	200 200 239 478 300 214 100 1870 440 30 127 30 100 161 100	· · · · · · · · · · · · · · · · · · ·	<u>-</u>	0.13 (0.09, 0.18) 0.16 (0.11, 0.22) 0.21 (0.16, 0.26) 0.25 (0.21, 0.29) 0.27 (0.22, 0.33) 0.29 (0.23, 0.35) 0.33 (0.24, 0.43) 0.38 (0.37, 0.42) 0.43 (0.38, 0.47) 0.53 (0.34, 0.72) 0.56 (0.47, 0.65) 0.70 (0.51, 0.85) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99) 1.00 (0.96, 1.00) 1.00 (0.96, 1.00) 1.48 (0.35, 0.81)	2.29 2.29 2.30 2.31 2.30 2.29 2.25 2.31 2.10 2.27 2.10 2.25 2.28 2.25 3.391
Mahajan 2004 Jar Juyal 2013 Utt Soel 2011 Ha Kamajit 2012 Pu Juyal 2013 Utt Juyal 2013 Utt Juyal 2013 Utt Dube 2012 Ra Sekhon 2014 Jar Patavegar 2014 Ne Kumari 2014 Jar Nair 2007 Ne Kumari 2014 Jar Jube 2012 Ra June 2012 Ra June 2012 Ra June 2012 Ra June 2012 Ra Manhas 2015 Subtotal (1°2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra Utt N. 2012 Jaunpur Utt N. 2012 Jaunpur Utt N. 2012 Mirzapur Utt Subtotal (1°2 = 19.7%, p = 0.26 East India Sarkar 2012 We Paria 2014 Bih	mmu & Kashmir tarakhand aryana unjab tarakhand ajasthan mmu & Kashmir ew Delhi mmu & Kashmir ew Delhi mmu & Kashmir ajasthan mmu & Kashmir o) tar Pradesh tar Pradesh tar Pradesh	Urban Rural Urban Urban Urban Urban Urban Urban Urban Rural Rural Rural Rural Rural Rural Rural Rural Rural	32 49 118 82 61 33 738 188 16 71 21 73 157 100	200 239 478 300 214 100 1870 440 30 127 30 100 161 100	· · · · · · · · · · · · · · · · · · ·	* ;	0.16 (0.11, 0.22) 0.21 (0.16, 0.26) 0.25 (0.21, 0.29) 0.27 (0.22, 0.33) 0.29 (0.23, 0.35) 0.33 (0.24, 0.43) 0.39 (0.37, 0.42) 0.43 (0.38, 0.47) 0.53 (0.34, 0.72) 0.56 (0.47, 0.65) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99)	2.29 2.30 2.31 2.30 2.29 2.25 2.32 2.31 2.10 2.27 2.10 2.25 2.28 2.25
Juyal 2013 Utt Goel 2011 Ha Goel 2011 Ha Kamaljit 2012 Pu Juyal 2013 Utt Dube 2012 Ra Sekhon 2014 Jai Patavegar 2014 Ne Kumari 2014 Jai Nair 2007 Ne Kumari 2014 Jai Dube 2012 Ra Jain 2012 Ra Jain 2012 Ra Manhas 2015 Jai Subtotal (I^2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra N. 2012 Sonebhadra N. 2012 Sonebhadra N. 2012 Subtotal (I^2 = 19.7%, p = 0.29 East India Sarkar 2012 We N. 2013 East Singhbhum Jatta 2012 We N. 2013 Gumla Jh N. 2013 Gumla Jh N. 2013 Gumla Jh Datta 2012 We Paria 2014 We P	tarakhand aryana unjab tarakhand ajasthan mmu & Kashmir ew Delhi mmu & Kashmir ew Delhi amu & Kashmir ajasthan mmu & Kashmir ajasthan mmu & Kashmir ajathan tar Pradesh tar Pradesh tar Pradesh tar Pradesh	Rural Urban Urban Urban Urban Urban Urban Rural Rural Rural Rural Urban	49 118 82 61 33 738 188 16 71 21 73 157 100	239 478 300 214 100 1870 440 30 127 30 100 161 100	*****	-	0.21 (0.16, 0.26) 0.25 (0.21, 0.29) 0.27 (0.22, 0.33) 0.29 (0.23, 0.35) 0.33 (0.24, 0.43) 0.39 (0.37, 0.42) 0.43 (0.38, 0.47) 0.53 (0.34, 0.72) 0.56 (0.47, 0.65) 0.73 (0.63, 0.81) 0.79 (0.51, 0.85) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99)	2.30 2.31 2.30 2.29 2.25 2.32 2.31 2.10 2.27 2.10 2.25 2.28 2.25
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Kamalji 2012 Pu Juyal 2013 Utt Dube 2012 Ra Sekhon 2014 Jai Patavegar 2014 Ne Kumari 2014 Jai Nair 2007 Ne Kumari 2014 Jai Rumari 2014 Jai Rumari 2014 Jai Rumari 2014 Ra Jain 2012 Ra Jain 2013 Subtotal (I*2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra N. 2012 Sonebhadra N. 2012 Jaunpur Utt N. 2012 Mirzapur Utt Sarkar 2012 We Sarkar 2012 We Paria 2014 We	unjab tarakhand ajasthan mmu & Kashmir ew Delhi mmu & Kashmir ew Delhi mmu & Kashmir ajasthan mmu & Kashmir o) tar Pradesh tar Pradesh tar Pradesh tar Pradesh	Urban Urban Urban Urban Urban Urban Rural Rural Rural Rural Urban	82 61 33 738 188 16 71 21 73 157 100	300 214 100 1870 440 30 127 30 100 161 100	*****************	-	0.27 (0.22, 0.33) 0.29 (0.23, 0.35) 0.33 (0.24, 0.43) 0.39 (0.37, 0.42) 0.43 (0.38, 0.47) 0.53 (0.34, 0.72) 0.56 (0.47, 0.65) 0.70 (0.51, 0.85) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99)	2.30 2.29 2.25 2.32 2.31 2.10 2.27 2.10 2.25 2.28 2.25
Juyal 2013 Utt Dube 2012 Ra Sekhon 2014 Jai Patavegar 2014 Ne Kumari 2014 Jai Nair 2007 Ne Kumari 2014 Jai Nair 2007 Rumari 2014 Jai Dube 2012 Ra Jain 2012 Ra Jain 2012 Ra Jain 2012 Ro Jain 2012 Ra Manhas 2015 Jai Subtotal (I ² = 98.5%, p = 0.00 Central India N. 2012 Jaunpur Utt N. 2012 Jaunpur Utt N. 2012 Mirzapur Subtotal (I ² = 19.7%, p = 0.26 East India Sarkar 2012 We N. 2013 East Singhbhum Jatta 2012 Paria 2014 We N. 2013 Nalanda Biř	tarakhand ajasthan mmu & Kashmir ew Delhi mmu & Kashmir ew Delhi mmu & Kashmir ajasthan mmu & Kashmir ojasthan mmu & Kashmir o) tar Pradesh tar Pradesh tar Pradesh	Urban Urban Urban Urban Urban Rural Rural Rural Rural Rural Rural Urban	61 33 738 188 16 71 21 73 157 100	214 100 1870 440 30 127 30 100 181 100	************************	<u>.</u>	0.29 (0.23, 0.35) 0.33 (0.24, 0.43) 0.39 (0.37, 0.42) 0.43 (0.38, 0.47) 0.53 (0.34, 0.72) 0.56 (0.47, 0.65) 0.70 (0.51, 0.85) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99)	2.29 2.25 2.32 2.31 2.10 2.27 2.10 2.25 2.28 2.25
Dube 2012 Ra Sekhon 2014 Jai Patavegar 2014 Ne Kumari 2014 Jai Nair 2007 Ne Kumari 2014 Jai Dube 2012 Ra Jain 2012 Ra Manhas 2015 Jai Subtotal (I*2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra Utt N. 2012 Jaunpur Utt N. 2012 Jaunpur Utt N. 2012 Jaunpur Utt Subtotal (I*2 = 19.7%, p = 0.26 East India Sarkar 2012 We N. 2013 East Singhbhum Jh Datta 2012 We Paria 2014 We Datta 2012 We Paria 2014 We N. 2013 Nalanda Bit	ajasthan mmu & Kashmir ww Delhi mmu & Kashmir ww Delhi mmu & Kashmir ajasthan ajasthan mmu & Kashmir 0) tar Pradesh tar Pradesh tar Pradesh	Urban Urban Urban Urban Rural Rural Rural Rural Urban	738 188 16 71 21 73 157 100	100 1870 440 30 127 30 100 161 100	\\	-	0.33 (0.24, 0.43) 0.39 (0.37, 0.42) 0.43 (0.38, 0.47) 0.53 (0.34, 0.72) 0.56 (0.47, 0.65) 0.70 (0.51, 0.85) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99)	2.25 2.32 2.31 2.10 2.27 2.10 2.25 2.28 2.25
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Patavegar 2014 Ne Kumari 2014 Jai Nair 2007 Nair 2007 Nair 2007 Nair 2014 Jai Dube 2012 Ra Jain 2012 Ra Jain 2015 Jain 2016 Jain 2017 Jain 2017 Jain 2018 Ja	ew Delhi mmu & Kashmir ew Delhi mmu & Kashmir ajasthan mmu & Kashmir 0) tar Pradesh tar Pradesh tar Pradesh 9)	Urban Urban Rural Rural Rural Rural Urban Rural Rural	188 16 71 21 73 157 100	440 30 127 30 100 161 100	\	*	0.43 (0.38, 0.47) 0.53 (0.34, 0.72) 0.56 (0.47, 0.65) 0.70 (0.51, 0.85) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99)	2.31 2.10 2.27 2.10 2.25 2.28 2.25
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Nair 2007 Ne kumari 2014 Jai Dube 2012 Ra Jain 2012 Ra Manhas 2015 Ra Subtotal (I^2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra N. 2012 Sonebhadra N. 2012 Sunpur Utt N. 2012 Mirzapur Utt Subtotal (I^2 = 19.7%, p = 0.29 East India Sarkar 2012 We N. 2013 East Singhbhum Jain Datta 2012 We N. 2013 Gumla Jh N. 2013 Gumla Jh Datta 2012 We Paria 2014 We Paria 2018 We N. 2013 Nalanda Bih	ew Delhi mmu & Kashmir ajasthan ajasthan mmu & Kashmir 0) tar Pradesh tar Pradesh tar Pradesh tar Pradesh	Rural Rural Rural Rural Urban Rural Rural	71 21 73 157 100	127 30 100 161 100	*	+,	0.56 (0.47, 0.65) 0.70 (0.51, 0.85) 0.73 (0.63, 0.81) 0.98 (0.94, 0.99) 1.00 (0.96, 1.00)	2.27 2.10 2.25 2.28 2.25
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Manhas 2015 Subtotal (1°2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra Utt N. 2012 Jaunpur Utt N. 2012 Mirzapur Utt Subtotal (1°2 = 19.7%, p = 0.26 East India Sarkar 2012 We Paria 2014 We N. 2013 Gumla Jh Datta 2012 We Paria 2014 We Paria 2014 We Paria 2014 We N. 2013 Gumla Jh Datta 2012 We Paria 2014 We N. 2013 Nalanda Bił	, mmu & Kashmir 0) tar Pradesh tar Pradesh tar Pradesh 9)	Urban Rural Rural	100	100		. 7	1.00 (0.96, 1.00)	2.25
Subtotal (I^2 = 98.5%, p = 0.00 Central India N. 2012 Sonebhadra Utt N. 2012 Jaunpur Utt Subtotal (I^2 = 19.7%, p = 0.29 East India Sarkar 2012 We N. 2013 East Singhbhum Datta 2014 We Dasgupta 2008 We N. 2013 Nalanda Biř	0) tar Pradesh tar Pradesh tar Pradesh 9)	Rural Rural	111			• •		
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N. 2012 Sonebhadra Utt N. 2012 Jaunpur Utt N. 2012 Mirzapur Utt Subtotal (I^2 = 19.7%, p = 0.29 East India Sarkar 2012 We Joatta 2014 We N. 2013 Gumla Jahi Datta 2014 We Paria 2014 We Dasgupta 2018 We N. 2013 Gland Biř	tar Pradesh tar Pradesh 9)	Rural			1		I	
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N. 2012 Mirzapur Utt Subtotal (I^2 = 19.7%, p = 0.29 East India Sarkar 2012 We N. 2013 East Singhbhum Jh. 2013 East Singhbhum Jh. 2013 Gumla Jh. 2014 We Paria 2014 Bi	tar Pradesh 9)			600			0.19 (0.15, 0.22)	2.32
Subtotal (I^2 = 19.7%, p = 0.29 East India Sarkar 2012 We Nu. 2013 East Singhbhum Jatta 2014 We Paria 2014 We Nu. 2013 Gumla Jhi Datta 2012 We Paria 2014 We Dasgupta 2008 We Nu. 2013 Nalanda Biř	9)	Rural	130	600	•		0.22 (0.18, 0.25)	2.32
East India Sarkar 2012 N. 2013 East Singhbhum Datta 2012 Paria 2014 N. 2013 Gumla Jih Datta 2012 We Paria 2014 We Paria 2014 Dasgupta 2008 We N. 2013 Nalanda Biř	•		130	600			0.22 (0.18, 0.25)	2.32
Sarkar 2012 We N. 2013 East Singhbhum Datta 2012 We Paria 2014 We N. 2013 Gumla Jhi Datta 2012 We Paria 2014 We Dasgupta 2008 We N. 2013 Nalanda Biř					•		0.21 (0.19, 0.23)	6.95
N. 2013 East Singhbhum Jh. Datha 2012 We Paria 2014 We N. 2013 Gumla Jh. Datha 2012 We Paria 2014 We N. 2013 Nalanda Bir	B *				į į			
N. 2013 East Singhbhum Jh. Datha 2012 We Paria 2014 We N. 2013 Gumla Jh. Datha 2012 We Paria 2014 We N. 2013 Nalanda Bir	est Bengal	Rural	14	510	•		0.03 (0.02, 0.05)	2.31
Datta 2012 We Paria 2014 We Varia 2014 Up Varia 2014 Jh Datta 2012 We Paria 2014 We Oasgupta 2008 We V. 2013 Nalanda Bii	arkand	Rural	86	600	* w		0.14 (0.12, 0.17)	2.32
Paria 2014 We N. 2013 Gumla Jha Datta 2012 We Paria 2014 We Dasgupta 2008 We N. 2013 Nalanda Bih		Urban	9	58	-			2.20
N. 2013 Gumla Jha Datta 2012 We Paria 2014 We Dasgupta 2008 We N. 2013 Nalanda Bih	est Bengal				The second		0.16 (0.07, 0.27)	
Datta 2012 We Paria 2014 We Dasgupta 2008 We N. 2013 Nalanda Bih	est Bengal	Urban	48	275	10		0.17 (0.13, 0.22)	2.30
Paria 2014 We Dasgupta 2008 We N. 2013 Nalanda Bih	arkand	Rural	106	600			0.18 (0.15, 0.21)	2.32
Dasgupta 2008 We N. 2013 Nalanda Bih	est Bengal	Rural	16	70	-		0.23 (0.14, 0.34)	2.22
N. 2013 Nalanda Bih	est Bengal	Rural	67	266			0.25 (0.20, 0.31)	2.30
N. 2013 Nalanda Bih	est Bengal	Rural	68	160	-		0.43 (0.35, 0.51)	2.28
		Rural	258	600			0.43 (0.39, 0.47)	2.32
	est Bengal	Urban	71	147	<u> </u>		0.48 (0.40, 0.57)	2.28
	har	Rural	317	600	-			2.32
					-	181	0.53 (0.49, 0.57)	
	est Bengal	Slum	611	798	'		0.77 (0.73, 0.79)	2.32
	est Bengal	Rural	152	190		-	0.80 (0.74, 0.85)	2.29
Subtotal (I^2 = 99.3%, p = 0.00	U)						0.34 (0.19, 0.50)	29.76
West India		0 - 1:1	0.5	700	_		0.05 (0.00.0.00)	0.00
	ujarat	Combined	35	762	■		0.05 (0.03, 0.06)	2.32
	aharashtra	Rural	56	271	-		0.21 (0.16, 0.26)	2.30
Minhas 2014 Ma	aharashtra	Slum	27	30	1 !	-	0.90 (0.73, 0.98)	2.10
Minhas 2014 Ma	aharashtra	Rural	28	30	!	-	0.93 (0.78, 0.99)	2.10
Subtotal (1^2 = 98.9%, p = 0.00	0)						0.50 (0.16, 0.84)	8.81
South India								
Ade 2013 Ka	amataka	Rural	1	80			0.01 (0.00, 0.07)	2.23
	ndhra Pradesh	Slum	ė	257			0.04 (0.02, 0.07)	2.30
	mil Nadu	Rural	42	263	-		0.16 (0.12, 0.21)	2.30
		Slum	25	100	-			
	ndhra Pradesh				-		0.25 (0.17, 0.35)	2.25
	mil Nadu	Urban	40	144	- I		0.28 (0.21, 0.36)	2.27
	ımil Nadu	Urban	140	375	<u>★</u>		0.37 (0.32, 0.42)	2.31
Shanbhag 2012 Ka	amataka	Rural	140	329			0.43 (0.37, 0.48)	2.30
Jothy 2012 Tai	ımil Nadu	Rural	164	330	-		0.50 (0.44, 0.55)	2.30
	ndhra Pradesh	Rural	326	400		-	0.81 (0.77, 0.85)	2.31
Subtotal (1^2 = 98.9%, p = 0.00	0)	. varial	020	100		-	0.29 (0.13, 0.49)	20.58
Heterogeneity between groups:	p = 0.270				_		0.20 (0.20 0.40)	100.0
Overall (1^2 = 98.97%, p = 0.00	u);				9		0.38 (0.30, 0.46)	100.0
					 			

Figure S3.21: Exercise or playing restrictions during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

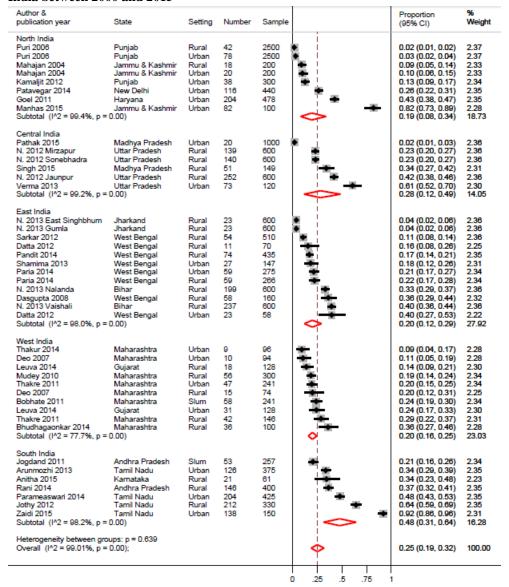


Figure S3.22: Kitchen work or cooking restrictions during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weigh
North India					i		
Sekhon 2014	Jammu & Kashmir	Urban	56	1870	•	0.03 (0.02, 0.04)	2.79
Misra 2013	Haryana	Rural	31	995	•	0.03 (0.02, 0.04)	2.79
Kumari 2014	Jammu & Kashmir	Rural	3	30		0.10 (0.02, 0.27)	2.42
Juyal 2013	Uttarakhand	Urban	25	214	-	0.12 (0.08, 0.17)	2.74
Patavegar 2014	New Delhi	Urban	66	440	-	0.15 (0.12, 0.19)	2.77
Juyal 2013	Uttarakhand	Rural	36	239	=	0.15 (0.11, 0.20)	2.75
Khanna 2005	Rajasthan	Rural	44	281	=	0.16 (0.12, 0.20)	2.75
			33	200	-		
Mahajan 2004	Jammu & Kashmir	Rural				0.17 (0.12, 0.22)	2.73
Mahajan 2004	Jammu & Kashmir	Urban	36	200	-	0.18 (0.13, 0.24)	2.73
Puri 2006	Punjab	Urban	618	2500		0.25 (0.23, 0.26)	2.79
Kumari 2014	Jammu & Kashmir	Urban	11	30	-	0.37 (0.20, 0.56)	2.42
Khanna 2005	Rajasthan	Urban	121	330	-	0.37 (0.31, 0.42)	2.76
Puri 2006	Punjab	Rural	1001	2500	•	0.40 (0.38, 0.42)	2.79
Goel 2011	Haryana	Urban	217	478	-	0.45 (0.41, 0.50)	2.77
Manhas 2015	Jammu & Kashmir	Urban	59	100		0.59 (0.49, 0.69)	2.67
Jain 2012	Raiasthan	Rural	140	161	-	0.87 (0.81, 0.92)	2.72
Subtotal (I^2 = 99.3%, p =					◇	0.25 (0.15, 0.36)	43.41
Central India							
Ventrai India N. 2012 Jaunpur	Uttar Pradesh	Rural	161	600	I -	0.07 (0.00 0.04)	2.78
					T.	0.27 (0.23, 0.31)	
/erma 2013	Uttar Pradesh	Urban	35	120	-	0.29 (0.21, 0.38)	2.69
N. 2012 Sonebhadra	Uttar Pradesh	Rural	182	600	<u>*</u> _	0.30 (0.27, 0.34)	2.78
Kushwah 2007	Madhya Pradesh	Rural	80	199	-	0.40 (0.33, 0.47)	2.73
Subtotal (I^2 = 75.4%, p =	0.01)				>	0.31 (0.26, 0.36)	10.98
East India							
N. 2013 East Singhbhum	Jharkand	Rural	42	600		0.07 (0.05, 0.09)	2.78
N. 2013 Gumla	Jharkand	Rural	48	600		0.08 (0.08, 0.10)	2.78
albiaknungi 2015	West Bengal	Rural	38	86		0.44 (0.33, 0.55)	2.65
		Rural	86	190	-		2.73
Sudeshna 2012	West Bengal					0.45 (0.38, 0.53)	
N. 2013 Vaishali Subtotal (I^2 = 99.3%, p =	Bihar 0.00)	Rural	325	600		0.54 (0.50, 0.58) 0.29 (0.09, 0.55)	2.78 13.72
	•				i		
West India Kale Kalpana 2014	Maharashtra	Rural	7	178	_	0.04 (0.02, 0.08)	2.73
Minhas 2014	Maharashtra	Rural	3	30	<u> </u>		2.42
			_			0.10 (0.02, 0.27)	
.euva 2014	Gujarat	Urban	21	128	-	0.16 (0.10, 0.24)	2.70
.euva 2014	Gujarat	Rural	29	128	-	0.23 (0.16, 0.31)	2.70
Sumana 2015	Gujarat	Urban	33	128	<u> </u>	0.26 (0.18, 0.34)	2.70
Rana 2015	Gujarat	Rural	106	400	· ·	0.26 (0.22, 0.31)	2.77
Minhas 2014	Maharashtra	Slum	11	30	- •	0.37 (0.20, 0.56)	2.42
Gosavi 2015	Maharashtra	Urban	60	60		1.00 (0.94, 1.00)	2.60
Subtotal (I^2 = 97.8%, p =	0.00)				\Diamond	0.30 (0.13, 0.51)	21.03
South India							
Ade 2013	Karnataka	Rural	7	80		0.09 (0.04, 0.17)	2.64
Katkuri 2014		Urban	49	250			2.75
	Telangana					0.20 (0.15, 0.25)	
Zaidi 2015	Tamil Nadu	Urban	58	150	-	0.39 (0.31, 0.47)	2.71
Pokhrel 2014 Subtotal (I^2 = 95.1%, p =	Karnataka 0.00)	Urban	126	303		0.42 (0.36, 0.47) 0.26 (0.13, 0.42)	2.76
Heterogeneity between gro					L 🙏	0.27 (0.24 0.24)	100 5
Overall (I^2 = 98.85%, p =	U.UU);				\(\forall \)	0.27 (0.21, 0.34)	100.0
					ļ.,,	1	

 $Figure~S3.23: \ \, \text{Household work restrictions during menstruation among adolescent girls by region, studies published in India between 2000 and 2015}$

Garg 2001 N Puri 2006 F Patavegar 2014 N Nair 2007 N Singh 2013 U Subtotal (I^2 = 99.4%, p = East India Sarkar 2012 V Datta 2012 V Datta 2012 V	West Bengal West Bengal West Bengal West Bengal : 0.00)	Urban Slum Rural Urban Rural Rural Rural Urban Rural	144 28 186 96 89 166	2500 380 2500 440 127 200 510 70 58 160	······································	*	0.06 (0.05, 0.07) 0.07 (0.05, 0.10) 0.07 (0.06, 0.09) 0.22 (0.18, 0.26) 0.70 (0.61, 0.78) 0.83 (0.77, 0.88) 0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.28 3.26 3.28 3.26 3.19 3.23 19.51 3.26 3.12 3.09 3.21
Garg 2001 N Puri 2006 F Patavegar 2014 N Nair 2007 N Singh 2013 L Subtotal (I^2 = 99.4%, p = East India Sarkar 2012 V Datta 2012 V Datta 2012 V Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	New Delhi Punjab New Delhi New Delhi Uttarakhand 0.00) West Bengal West Bengal West Bengal West Bengal O.00) Maharashtra	Slum Rural Urban Rural Rural Rural Urban Rural	28 186 96 89 166	380 2500 440 127 200 510 70 58	↑	*.	0.07 (0.05, 0.10) 0.07 (0.06, 0.09) 0.22 (0.18, 0.26) 0.70 (0.61, 0.78) 0.83 (0.77, 0.88) 0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.26 3.28 3.26 3.19 3.23 19.51 3.26 3.12 3.09 3.21
Pun 2006 F Patavegar 2014 N Nair 2007 N Singh 2013 U Subtotal (I^2 = 99.4%, p = East India Sarkar 2012 V Datta 2012 V Datta 2012 V Datta 2012 Datta 2012 Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	Punjab New Delhi New Delhi Uttarakhand 0.000) West Bengal West Bengal West Bengal West Bengal Vest Bengal 0.000)	Rural Urban Rural Rural Rural Rural Urban Rural	186 96 89 166 14 8 13	2500 440 127 200 510 70 58	······································	*.	0.07 (0.06, 0.09) 0.22 (0.18, 0.26) 0.70 (0.61, 0.78) 0.83 (0.77, 0.88) 0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.28 3.26 3.19 3.23 19.51 3.26 3.12 3.09 3.21
Patavegar 2014 Nair 2007 N Singh 2013 U Subtotal (I^2 = 99.4%, p = East India Sarkar 2012 V Datta 2012 V Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	New Delhi New Delhi Uttarakhand (0.00) West Bengal West Bengal West Bengal West Bengal (0.00)	Urban Rural Rural Rural Rural Urban Rural	96 89 166 14 8 13	440 127 200 510 70 58	·*···	*.	0.22 (0.18, 0.26) 0.70 (0.61, 0.78) 0.83 (0.77, 0.88) 0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.26 3.19 3.23 19.51 3.26 3.12 3.09 3.21
Nair 2007 N Singh 2013 L Subtotal (I^2 = 99.4%, p = East India Sarkar 2012 V Datta 2012 V Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	New Delhi Uttarakhand : 0.00) West Bengal West Bengal West Bengal West Bengal : 0.00)	Rural Rural Rural Rural Urban Rural	89 166 14 8 13	127 200 510 70 58	**	**	0.70 (0.61, 0.78) 0.83 (0.77, 0.88) 0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.19 3.23 19.51 3.26 3.12 3.09 3.21
Singh 2013 U Subtotal (I^2 = 99.4%, p = East India Sarkar 2012 V Datta 2012 V Datta 2012 V Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	Uttarakhand 0.00) West Bengal West Bengal West Bengal West Bengal West Bengal 0.00) Maharashtra	Rural Rural Rural Urban Rural	166 14 8 13	510 70 58	↑ + †	**	0.70 (0.61, 0.78) 0.83 (0.77, 0.88) 0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.23 19.51 3.26 3.12 3.09 3.21
Subtotal (I^2 = 99.4%, p = East India Sarkar 2012 V Datta 2012 V Datta 2012 V Dasgupta 2018 V Subtotal (I^2 = 96.7%, p =	West Bengal West Bengal West Bengal West Bengal West Bengal 0.00) Maharashtra	Rural Rural Urban Rural	14 8 13	510 70 58	0 *+ 1 *	*	0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.26 3.12 3.09 3.21
East India Sarkar 2012 V Datta 2012 V Datta 2012 V Dasgupta 2018 V Subtotal (1^2 = 96.7%, p =	West Bengal West Bengal West Bengal West Bengal : 0.00)	Rural Urban Rural	8	70 58	♦ ₩		0.29 (0.13, 0.47) 0.03 (0.02, 0.05) 0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.26 3.12 3.09 3.21
Sarkar 2012 V Datta 2012 V Datta 2012 V Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	West Bengal West Bengal West Bengal : 0.00)	Rural Urban Rural	8	70 58	*		0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.12 3.09 3.21
Datta 2012 V Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	West Bengal West Bengal West Bengal : 0.00)	Rural Urban Rural	8	70 58	***		0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.12 3.09 3.21
Datta 2012 V Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	West Bengal West Bengal West Bengal : 0.00)	Rural Urban Rural	13	70 58	***		0.11 (0.05, 0.21) 0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.12 3.09 3.21
Datta 2012 V Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	West Bengal West Bengal : 0.00) Maharashtra	Urban Rural	13	58	*		0.22 (0.13, 0.35) 0.29 (0.22, 0.36)	3.09 3.21
Dasgupta 2008 V Subtotal (I^2 = 96.7%, p =	West Bengal : 0.00) Maharashtra	Rural			⇔		0.29 (0.22, 0.36)	3.21
Subtotal (I^2 = 96.7%, p =	(0.00) Maharashtra		10	100	⇔			
West India		Rural					0.14 (0.02, 0.34)	12.69
west iildia		Pural			1 !			
Mudey 2010 N			21	300	l=		0.07/0.04.0.44	3.25
		Urban	9	94			0.07 (0.04, 0.11)	3.16
	Maharashtra		5 51		- T		0.10 (0.04, 0.17)	
	Gujarat	Rural		400	™ _J		0.13 (0.10, 0.16)	3.26
	Gujarat	Rural	27	128	-		0.21 (0.14, 0.29)	3.20
	Maharashtra	Urban	60	241	-		0.25 (0.20, 0.31)	3.24
	Maharashtra	Rural	44	176	*		0.25 (0.19, 0.32)	3.22
	Gujarat	Urban	33	128	·		0.26 (0.18, 0.34)	3.20
	Maharashtra	Rural	42	146	-		0.29 (0.22, 0.37)	3.21
	Maharashtra	Slum	72	241	- Table		0.30 (0.24, 0.36)	3.24
	Gujarat	Combined	276	762			0.36 (0.33, 0.40)	3.27
	Maharashtra	Rural	48	93	-	-	0.52 (0.41, 0.62)	3.16
Nemade 2009	Maharashtra	Urban	105	197		•	0.53 (0.46, 0.60) 0.26 (0.18, 0.35)	3.23 38.62
3ubtotal (1 2 = 30.176, p =	0.00)				Y		0.20 (0.10, 0.33)	30.02
South India	F	D1	40	202	L :			
	Tamil Nadu	Rural	12	263	.		0.05 (0.02, 0.08)	3.24
	Telangana	Urban	20	250	-		0.08 (0.05, 0.12)	3.24
	Karnataka	Rural	24	199	T .		0.12 (0.08, 0.17)	3.23
	Karnataka	Urban	47	303	*		0.16 (0.12, 0.20)	3.25
	Andhra Pradesh	Slum	59	257	<u>*</u> -		0.23 (0.18, 0.29)	3.24
	Tamil Nadu	Rural	109	330	*		0.33 (0.28, 0.38)	3.25
	Tamil Nadu	Urban	58	150	1 Total		0.39 (0.31, 0.47)	3.21
	Tamil Nadu	Urban	158	375	1 🗮	-	0.42 (0.37, 0.47)	3.26
	Tamil Nadu	Urban	365	425		•	0.86 (0.82, 0.89)	3.26
Subtotal (I^2 = 99.2%, p =	0.00)				\Rightarrow		0.27 (0.11, 0.48)	29.18
Heterogeneity between gro					1 :			
Overall (I^2 = 99.00%, p =	0.00);				�		0.25 (0.18, 0.34)	100.00

Figure S3.24: Restrictions with regards to leaving the house or isolation during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weight
North India Misra 2013 Jain 2012 Singh 2013 Subtotal (I^2 = 99.6%, p	Haryana Rajasthan Uttarakhand o = 0.00)	Rural Rural Rural	87 92 165	995 161 200	* *	0.09 (0.07, 0.11) 0.57 (0.49, 0.65) 0.82 (0.77, 0.87) 0.48 (0.04, 0.94)	3.42 3.44
Central India N. 2012 Sonebhadra N. 2012 Mirzapur Verma 2013 Singh 2015 Kushwah 2007 N. 2012 Jaunpur Subtotal (1^2 = 96.8%, p	Uttar Pradesh Uttar Pradesh Uttar Pradesh Madhya Pradesh Madhya Pradesh Uttar Pradesh o = 0.00)		62 136 36 47 74 226	600 600 120 149 199 600	· * * * * * • • • • • • • • • • • • • •	0.10 (0.08, 0.13) 0.23 (0.19, 0.26) 0.30 (0.23, 0.39) 0.32 (0.25, 0.39) 0.37 (0.31, 0.44) 0.38 (0.34, 0.42) 0.27 (0.17, 0.39)	3.50 3.39 3.41 3.44 3.50
East India N. 2013 Gumla N. 2013 East Singhbhur Sarkar 2012 N. 2013 Nalanda N. 2013 Vaishali Subtotal (I^2 = 98.1%, p	West Bengal Bihar Bihar	Rural Rural Rural Rural Rural	16 18 70 118 120	600 600 510 600 600	\Q	0.03 (0.02, 0.04) 0.03 (0.02, 0.05) 0.14 (0.11, 0.17) 0.20 (0.17, 0.23) 0.20 (0.17, 0.23) 0.10 (0.04, 0.20)	3.50 3.49 3.50 3.50
West India Deo 2007 Deo 2007 Mudey 2010 Thakre 2011 Shah 2013 Thakre 2011 Shitole 2012 Nemade 2009 Subtotal (I^2 = 94.2%, I	Maharashtra Maharashtra Maharashtra Gujarashtra Gujarashtra Maharashtra Maharashtra Maharashtra D = 0.00)	Urban Rural Rural Urban Rural Rural Rural Urban	5 14 71 65 55 63 79 102	94 74 300 241 164 146 176 197	·******	0.05 (0.02, 0.12) 0.19 (0.12, 0.29) 0.24 (0.19, 0.29) 0.27 (0.22, 0.33) 0.34 (0.27, 0.41) 0.43 (0.35, 0.51) 0.45 (0.38, 0.52) 0.52 (0.45, 0.59) 0.30 (0.20, 0.41)	3.31 3.47 3.46 3.42 3.41 3.43 3.44
South India Ade 2013 Katkuri 2014 Pokhrel 2014 Parameaswari 2014 Arunmozhi 2013 Jothy 2012 Zaidi 2015 Subtotal (I^2 = 98.5%, p	,	Rural Urban Urban Urban Urban Rural Urban	1 27 43 95 158 199	80 250 303 425 375 330 150	\	0.01 (0.00, 0.07) 0.11 (0.08, 0.15) 0.14 (0.11, 0.19) 0.22 (0.19, 0.27) 0.42 (0.37, 0.47) 0.60 (0.55, 0.65) 0.66 (0.58, 0.73) 0.28 (0.13, 0.46)	3.46 3.47 3.49 3.48 3.48 3.41
Heterogeneity between overall (I^2 = 98.54%, I					•	0.27 (0.20, 0.34)	100.00

Figure S3.25: Restrictions with regards to attending social functions during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		Proportion (95% CI)	% Weight
North India Misra 2013 Juyal 2013 Juyal 2013 Singh 2013 Subtotal (I^2 = 98.8%, p =	Haryana Uttarakhand Uttarakhand Uttarakhand = 0.00)	Rural Rural Urban Rural	54 17 22 114	995 239 214 200	· · · · · · · · · · · · · · · · · · ·	0.05 (0.04, 0.07) 0.07 (0.04, 0.11) 0.10 (0.07, 0.15) 0.57 (0.50, 0.64) 0.17 (0.03, 0.39)	4.01 4.00 4.00
Central India N. 2012 Jaunpur N. 2012 Sonebhadra N. 2012 Mirzapur Subtotal (I^2 = 76.8%, p =	Uttar Pradesh Uttar Pradesh Uttar Pradesh = 0.01)	Rural Rural Rural	257 297 304	600 600 600	• •	0.43 (0.39, 0.47) 0.50 (0.45, 0.54) 0.51 (0.47, 0.55) 0.48 (0.43, 0.52)	4.05 4.05
East India Datta 2012 Dasgupta 2008 N. 2013 East Singhbhum N. 2013 Gumla Shamima 2013 Datta 2012 Sarkar 2012 N. 2013 Vaishali N. 2013 Nalanda Subtotal (I^2 = 96.0%, p =	Jharkand West Bengal West Bengal West Bengal Bihar Bihar	Rural Rural Rural Rural Urban Urban Rural Rural Rural	2 14 53 56 14 10 123 149 184	70 160 600 600 147 58 510 600 600	\	0.03 (0.00, 0.10) 0.09 (0.05, 0.14) 0.09 (0.07, 0.11) 0.09 (0.07, 0.15) 0.10 (0.05, 0.15) 0.17 (0.09, 0.29) 0.24 (0.20, 0.28) 0.25 (0.21, 0.28) 0.31 (0.27, 0.35) 0.14 (0.09, 0.21)	3.98 4.05 4.05 3.97 3.80 4.05 4.05 4.05
West India Mudey 2010 Kale Kalpana 2014 Nemade 2009 Subtotal (I^2 = 98.1%, p =	Maharashtra Maharashtra Maharashtra = 0.00)	Rural Rural Urban	43 72 110	300 178 197	* * *	0.14 (0.11, 0.19) 0.40 (0.33, 0.48) 0.56 (0.49, 0.63) 0.36 (0.12, 0.63)	3.99 4.00
South India Katkuri 2014 Anitha 2015 Parameaswari 2014 Kavitha 2012 Jothy 2012 Rani 2014 Subtotal (I^2 = 98.3%, p = Heterogeneity between gr	oups: p = 0.023	Urban Rural Urban Urban Rural Rural	18 17 215 78 182 249	250 61 425 144 330 400	*****	0.07 (0.04, 0.11) 0.28 (0.17, 0.41) 0.51 (0.46, 0.55) 0.54 (0.46, 0.62) 0.55 (0.50, 0.61) 0.62 (0.57, 0.67) 0.42 (0.24, 0.61)	3.81 4.04 3.96 4.03 4.04 23.90
Overall (I^2 = 98.78%, p	= 0.00);				25 .5 .75 1	0.27 (0.19, 0.35)	100.00

Figure S3.26: Restrictions with regards to place of sleeping during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		ES (95% CI)	% Weight
North India							
Misra 2013	Haryana	Rural	17	995	•	0.02 (0.01, 0.03)	5.13
Sekhon 2014	Jammu & Kashmir	Urban	87	1870	•	0.05 (0.04, 0.06)	5.14
Kumari 2014	Jammu & Kashmir	Rural	4	30		0.13 (0.04, 0.31)	4.78
Jain 2012	Rajasthan	Rural	48	161	 	0.30 (0.23, 0.38)	5.07
Kumari 2014	Jammu & Kashmir	Urban	10	30	-	0.33 (0.17, 0.53)	4.78
Subtotal (I^2 = 97.1	%, p = 0.00)					0.13 (0.05, 0.23)	24.90
Central India							
Verma 2013	Uttar Pradesh	Urban	10	120		0.08 (0.04, 0.15)	5.05
Kushwah 2007	Madhya Pradesh	Rural	69	199	-	0.35 (0.28, 0.42)	5.09
Subtotal (I^2 = 97.0	%, p = 0.00)					0.20 (0.02, 0.51)	10.13
East India							
Datta 2012	West Bengal	Rural	16	70	-	0.23 (0.14, 0.34)	4.98
Datta 2012	West Bengal	Urban	16	58		0.28 (0.17, 0.41)	4.95
Subtotal (I^2 = 0.0%	b, p = 0.54)				•	0.25 (0.18, 0.33)	9.93
West India							
Minhas 2014	Maharashtra	Rural	4	30	-	0.13 (0.04, 0.31)	4.78
Leuva 2014	Gujarat	Urban	28	128		0.22 (0.15, 0.30)	5.05
Kale Kalpana 2014	Maharashtra	Rural	41	178	<u> →</u>	0.23 (0.17, 0.30)	5.08
Thakre 2011	Maharashtra	Urban	57	241	*	0.24 (0.18, 0.30)	5.10
Leuva 2014	Gujarat	Rural	36	128		0.28 (0.21, 0.37)	5.05
Thakre 2011	Maharashtra	Rural	45	146	i = -	0.31 (0.23, 0.39)	5.06
Minhas 2014	Maharashtra	Slum	10	30		0.33 (0.17, 0.53)	4.78
Gosavi 2015	Maharashtra	Urban	30	60		0.50 (0.37, 0.63)	4.95
Subtotal (I^2 = 69.6	%, p = 0.00)				•	0.27 (0.22, 0.33)	39.86
South India							
Ade 2013	Karnataka	Rural	1	80	★	0.01 (0.00, 0.07)	5.00
Zaidi 2015	Tamil Nadu	Urban	97	150	-	0.65 (0.56, 0.72)	5.07
Jothy 2012	Tamil Nadu	Rural	289	330		0.88 (0.84, 0.91)	5.11
Subtotal (I^2 = 99.3	%, p = 0.00)					0.48 (0.04, 0.94)	15.18
Heterogeneity betwe Overall (I^2 = 98.93)	en groups: p = 0.888					0.26 (0.14, 0.39)	100.00
Overall (r.2 - 90.93	π, μ – υ.υυ),					U.2U (U.14, U.39)	100.00
					0 .25 .5 .75		

Figure S3.27: Restrictions with regards to touching food or people during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample			ES (95% CI)	% Weight
North India					_	İ		
Kamaljit 2012	Punjab	Urban	78	300	*	i	0.26 (0.21, 0.31)	
Juyal 2013	Uttarakhand	Rural	100	239	-	1	0.42 (0.36, 0.48)	
Juyal 2013	Uttarakhand	Urban	120	214	_	-	0.56 (0.49, 0.63)	
Subtotal (I^2 = 95.9%, p =	0.00)				(>	0.41 (0.24, 0.59)	15.78
Central India						i I		
Kushwah 2007	Madhya Pradesh	Rural	54	199	-	i	0.27 (0.21, 0.34)	5.25
N. 2012 Jaunpur	Uttar Pradesh	Rural	380	600			0.63 (0.59, 0.67)	5.29
N. 2012 Sonebhadra	Uttar Pradesh	Rural	413	600		-	0.69 (0.65, 0.73)	5.29
Subtotal (I^2 = 98.2%, p =	0.00)				\	>	0.53 (0.33, 0.73)	15.83
East India						1		
N. 2013 Gumla	Jharkand	Rural	212	600		İ	0.35 (0.32, 0.39)	5.29
N. 2013 East Singhbhum	Jharkand	Rural	232	600	*	1	0.39 (0.35, 0.43)	
N. 2013 Vaishali	Bihar	Rural	526	600		i .	0.88 (0.85, 0.90)	5.29
Subtotal (I^2 = 99.6%, p =	0.00)				V		0.55 (0.21, 0.87)	
West India						I I		
Kale Kalpana 2014	Maharashtra	Rural	22	178	-	1	0.12 (0.08, 0.18)	5.24
Rana 2015	Guiarat	Rural	56	400	-	i	0.14 (0.11, 0.18)	
Thakre 2011	Maharashtra	Urban	65	241		1	0.27 (0.21, 0.33)	
Thakre 2011	Maharashtra	Rural	65	146		L	0.45 (0.36, 0.53)	
Shah 2013	Guiarat	Rural	146	164	-	_	0.89 (0.83, 0.93)	
Subtotal (I^2 = 99.0%, p =		rtarar	140	104		_	0.37 (0.12, 0.66)	
Oubtotal (1 2 = 55.676, p =	0.00)					!	0.57 (0.12, 0.00)	20.23
South India					_			
Zaidi 2015	Tamil Nadu	Urban	39	150	*	1	0.26 (0.19, 0.34)	
Kavitha 2012	Tamil Nadu	Urban	40	144	-	i	0.28 (0.21, 0.36)	
Jothy 2012	Tamil Nadu	Rural	202	330		*	0.61 (0.56, 0.66)	
Barathalakshmi 2014	Tamil Nadu	Urban	348	435		*	0.80 (0.76, 0.84)	
Parameaswari 2014	Tamil Nadu	Urban	422	425		i	0.99 (0.98, 1.00)	
Subtotal (I^2 = 99.4%, p =	: 0.00)				V		0.63 (0.30, 0.90)	26.28
Heterogeneity between gro	oups: p = 0.964					 		
Overall (I^2 = 99.24%, p =	0.00);				<	\gt	0.50 (0.36, 0.64)	100.00
				-	25	.5 .75	1	

Figure S3.28: Restrictions with regards to sitting arrangements during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

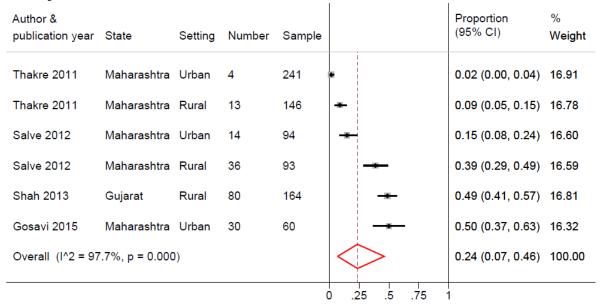


Figure S3.29: No restrictions at all during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		ES (95% CI)	% Weight
North India							
Puri 2006	Punjab	Rural	0	2500	•	0.00 (0.00, 0.00)	4.92
Kamaljit 2012	Punjab	Urban	6	300	ie i	0.02 (0.01, 0.04)	
Puri 2006	Punjab	Urban	155	2500		0.06 (0.05, 0.07)	
Nair 2007	New Delhi	Rural	10	127		0.08 (0.04, 0.14)	4.68
Sekhon 2014	Jammu & Kashmir	Urban	174	1870	▶	0.09 (0.08, 0.11)	
Patavegar 2014	New Delhi	Urban	148	440	_i *	0.34 (0.29, 0.38)	
Subtotal (I^2 = 99.4	4%, p = 0.00)				>	0.07 (0.01, 0.17)	29.13
East India							
Sudeshna 2012	West Bengal	Rural	2	190	•	0.01 (0.00, 0.04)	4.76
Sarkar 2012	West Bengal	Rural	53	510	•	0.10 (0.08, 0.13)	4.87
Dasgupta 2008	West Bengal	Rural	24	160	 	0.15 (0.10, 0.21)	4.73
Paria 2014	West Bengal	Rural	57	266	i s	0.21 (0.17, 0.27)	4.81
Paria 2014	West Bengal	Urban	97	275	-	0.35 (0.30, 0.41)	4.82
Subtotal (I^2 = 97.1	2%, p = 0.00)				\Diamond	0.15 (0.05, 0.27)	23.99
West India							
Deo 2007	Maharashtra	Rural	3	74		0.04 (0.01, 0.11)	4.52
Bobhate 2011	Maharashtra	Slum	24	241	*	0.10 (0.06, 0.14)	4.80
Thakur 2014	Maharashtra	Urban	14	96		0.15 (0.08, 0.23)	4.60
Mudey 2010	Maharashtra	Rural	51	300	🖚	0.17 (0.13, 0.22)	4.83
Kale Kalpana 2014	Maharashtra	Rural	36	178	1 -2-	0.20 (0.15, 0.27)	4.75
Deo 2007	Maharashtra	Urban	20	94	-	0.21 (0.14, 0.31)	4.60
Thakre 2011	Maharashtra	Rural	34	146		0.23 (0.17, 0.31)	4.71
Thakre 2011	Maharashtra	Urban	68	241	-	0.28 (0.23, 0.34)	4.80
Subtotal (I^2 = 85.0	0%, p = 0.00)				>	0.17 (0.12, 0.23)	37.61
South India							
Jothy 2012	Tamil Nadu	Rural	22	330	•	0.07 (0.04, 0.10)	4.84
Anitha 2015	Karnataka	Rural	11	61	 ■	0.18 (0.09, 0.30)	4.44
Subtotal (I^2 = 85.3	3%, p = 0.01)				\Diamond	0.11 (0.02, 0.25)	9.27
Heterogeneity betw	een groups: p = 0.9	45					
Overall (I^2 = 98.5	3%, p = 0.00);				\$	0.13 (0.08, 0.19)	100.00

Figure S3.30: School absenteeism because of menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Kumari 2014 Jammu & Kashmir Kumari 2014 Jammu & Kashmir Urban 1 30 0.03 (0.00, 0.1 Patavegar 2014 Jammu & Kashmir Urban 23	ithor & blication year	State	Setting	Number	Sample		ES (95% CI)	% Welgh
Verma 2013 Uttar Pradesh	maijit 2012 mari 2014 mari 2014 ttavegar 2014 elekhon 2014 bel 2011 sra 2013 aama 2008	Jammu & Kashmir Jammu & Kashmir New Delhi New Delhi Jammu & Kashmir Haryana Haryana New Delhi	Rural Urban Urban Slum Urban Urban Rural	1 1 23 16 237 67	30 440 200 1870 478 131		0.01 (0.00, 0.03) 0.03 (0.00, 0.17) 0.03 (0.00, 0.17) 0.05 (0.03, 0.08) 0.08 (0.05, 0.13) 0.13 (0.11, 0.14) 0.14 (0.11, 0.17) 0.15 (0.09, 0.22) 0.17 (0.11, 0.25) 0.08 (0.05, 0.13)	1.59 1.43 1.43 1.59 1.58 1.61 1.60 1.56 1.56 13.93
Paris 2014	rma 2013 ngh 2015 2012 Mirzapur 2012 Jaunpur 2012 Sonebhadra	Madhya Pradesh Uttar Pradesh Uttar Pradesh Uttar Pradesh	Rural Rural Rural	31 256 345	149 462 472	•	0.16 (0.10, 0.24) 0.21 (0.15, 0.28) 0.55 (0.51, 0.60) 0.73 (0.69, 0.77) 0.78 (0.74, 0.82) 0.48 (0.27, 0.70)	1.56 1.57 1.60 1.60 1.59 7.91
Minhas 2014 Maharashtra Rural 1 30	urla 2014 urla 2014 undit 2014 unyal 2008 urla 2012 2013 Gumla udeshna 2012 2013 Nalanda segupta 2008 2013 East Singhbhum urla 2006 2013 Valishall urla 2006 2013 Valishall urla 2006 urla 2006 urla 2006 urla 2006 urla 2006	West Bengal West Bengal West Bengal West Bengal West Bengal West Bengal Bihar West Bengal Jharkand West Bengal Bihar West Bengal	Rural Rural Urban Rural Rural Urban Rural Rural Rural Rural Rural	37 78 56 24 158 72 26 132 78 200 60 293	266 435 204 70 424 190 58 293 160 378 100 428	\ \ \	0.07 (0.04, 0.11) 0.14 (0.10, 0.19) 0.18 (0.11, 0.22) 0.27 (0.21, 0.34) 0.37 (0.33, 0.42) 0.38 (0.31, 0.42) 0.45 (0.32, 0.58) 0.45 (0.32, 0.58) 0.45 (0.39, 0.51) 0.60 (0.50, 0.70) 0.68 (0.64, 0.73) 0.70 (0.60, 0.79) 0.39 (0.28, 0.51)	1.59 1.59 1.59 1.58 1.52 1.59 1.58 1.51 1.57 1.59 1.55 1.59 1.55 21.99
Pokhrel 2014 Kamataka Urban 25 303 0.08 (0.05, 0.1 1 1 1 1 1 1 1 1 1	nhas 2014 nhas 2014 lakre 2011 litole 2012 uudhagaonkar 2014 live 2012 uah 2013 bo 2007 lakre 2011 bo 2007 mbhane 2012 udby 2010 bhate 2011 mbhane 2012 lie Kalpana 2014 na 2015 ligarahl 2014 vive 2015 vive 2015 vive 2016 vive 2016 vive 2016 vive 2017 vive 2016 vive 2017 vive 2017 vive 2018 vive 2018 vive 2018 vive 2018 vive 2019 vive 2018 vive 2019 vive	Maharashtra Maharashtra Maharashtra Maharashtra Gujarat Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Maharashtra Gujarat Maharashtra Gujarat Maharashtra Gujarat Maharashtra Gujarat Maharashtra Gujarat Maharashtra Gujarat Maharashtra	Rural Urban Rural Rural Rural Rural Rural Urban Rural Slum Rural Slum Rural Ru	1 97 45 521 51 11 9 47 337 339 74 209 244 448	30 241 176 100 94 352 70 146 88 390 241 171 178 280 93 128	o	0.03 (0.00, 0.17) 0.03 (0.00, 0.17) 0.04 (0.02, 0.07) 0.04 (0.02, 0.08) 0.04 (0.01, 0.10) 0.05 (0.02, 0.12) 0.06 (0.04, 0.09) 0.07 (0.02, 0.12) 0.08 (0.04, 0.13) 0.12 (0.09, 0.16) 0.12 (0.09, 0.16) 0.13 (0.09, 0.17) 0.15 (0.11, 0.21) 0.18 (0.13, 0.29) 0.26 (0.21, 0.32) 0.26 (0.21, 0.32) 0.26 (0.21, 0.32) 0.34 (0.29, 0.47) 0.34 (0.29, 0.44) 0.34 (0.39, 0.47) 0.41 (0.09, 0.20)	1.43 1.58 1.57 1.54 1.59 1.57 1.59 1.59 1.57 1.57 1.57 1.59 1.57 1.57 1.56 1.56 1.56 1.56 1.56
Avasarala 2008 Telangana Urban 38 53 - 0.72 (0.58, 0.5 1.2 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	whrei 2014 eeti 2015 gdand 2011 ian 2012 iifha 2013 iifha 2015 iigha 2015 igamani 2014 dasarala 2008 unmozhi 2013 igani 2015 irameaswari 2014 eddy 2005 thy 2012 rasarala 2008 iidi 2015 bibotal (1°2 - 98.5%, p - (**) etterogeneity between gro	Telangana Andhra Pradesh Kamataka Pondichery Kamataka Andhra Pradesh Telangana Tamii Nadu Kamataka Tamii Nadu Tamii Nadu Telangana Tamii Nadu Telangana Tamii Nadu	Urban Slum Rural Urban Rural Slum Rural Urban Urban Urban Urban Rural Urban Rural	57 27 22 36 9 18 9 115 160 206 134 191 38	570 257 199 325 61 100 44 380 400 425 232 330 53	****** \	0.08 (0.05, 0.12) 0.10 (0.08, 0.13) 0.11 (0.07, 0.15) 0.11 (0.07, 0.15) 0.11 (0.07, 0.16) 0.11 (0.08, 0.15) 0.15 (0.07, 0.26) 0.18 (0.11, 0.27) 0.20 (0.10, 0.35) 0.40 (0.35, 0.45) 0.48 (0.44, 0.53) 0.58 (0.51, 0.64) 0.58 (0.51, 0.64) 0.58 (0.51, 0.64) 0.72 (0.58, 0.83) 0.72 (0.58, 0.83) 0.72 (0.58, 0.83)	1.59 1.60 1.58 1.59 1.51 1.48 1.59 1.59 1.59 1.59 1.59 1.59 1.57 23.49

Figure S3.31: Change of absorbent in school during menstruation among adolescent girls by region, studies published in India between 2000 and 2015

Author & publication year	State	Setting	Number	Sample		ES (95% CI)	% Weight
Central India N. 2012 Jaunpur N. 2012 Mirzapur N. 2012 Sonebhadra Subtotal (I^2 = 88.7%,	Uttar Pradesh Uttar Pradesh Uttar Pradesh p = 0.00)	Rural Rural Rural	199 212 214	428 381 349	* * * ◊	0.46 (0.42, 0.51) 0.56 (0.50, 0.61) 0.61 (0.56, 0.66) 0.54 (0.46, 0.63)	5.93 5.92
East India Paria 2014 Paria 2014 N. 2013 East Singhbhui N. 2013 Vaishali N. 2013 Nalanda Pandit 2014 N. 2013 Gumla Subtotal (I^2 = 94.8%,	Bihar Bihar West Bengal Jharkand	Rural Urban Rural Rural Rural Rural Rural	41 67 100 122 87 197 144	266 275 325 393 233 435 297	\	0.15 (0.11, 0.20) 0.24 (0.19, 0.30) 0.31 (0.26, 0.36) 0.31 (0.26, 0.36) 0.37 (0.31, 0.44) 0.45 (0.41, 0.50) 0.48 (0.43, 0.54) 0.33 (0.24, 0.42)	5.89 5.91 5.93 5.86 5.94 5.90
West India Thakre 2011 Thakre 2011 Bodat 2013 Sumana 2015 Subtotal (I^2 = 98.9%,	Maharashtra Maharashtra Maharashtra Gujarat p = 0.00)	Rural Urban Rural Urban	15 30 339 90	146 241 622 128	*	0.10 (0.06, 0.16) 0.12 (0.09, 0.17) 0.55 (0.50, 0.58) 0.70 (0.62, 0.78) 0.35 (0.10, 0.65)	5.87 5.97 5.73
South India Omidvar 2010 Reddy 2005 Arunmozhi 2013 Subtotal (I^2 = 99.0%, Heterogeneity between Overall (I^2 = 97.81%,	groups: p = 0.389	Urban	29 46 253	147 232 373	**	0.20 (0.14, 0.27) 0.20 (0.15, 0.26) 0.68 (0.63, 0.73) 0.35 (0.07, 0.70) 0.37 (0.29, 0.46)	5.86 5.93 17.56
				() .25 .5 .75		