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DISAGREEMENT IN SPOUSAL REPORTS OF CURRENT CONTRACEPTIVE USE IN SUB-SAHARAN AFRICA

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Summary. Contraceptive prevalence is a key variable estimated from Demographic and Health Surveys. But the prevalence estimated from reports of husbands differs widely from that estimated for wives. In this research, using data from six Demographic and Health Surveys of sub-Saharan Africa, reports from spouses in monogamous couples with no other reported sex partners in the recent period are examined. Agreement ranged from 47% to 82%, but among couples in which one or both reported use, the 'both' category represented less than half in all nations except Zimbabwe. Husbands generally had higher reports of condoms, periodic abstinence and pills but fewer reports of the IUD, injections and female sterilization. Either discussion of family planning with the spouse and/or higher socioeconomic status was associated with agreement in most of the surveys. Ambiguities in the survey question regarding current use need to be reduced, perhaps with an added probe question for non-permanent methods.

Introduction

Contraceptive use is the variable that has the greatest impact on fertility levels in modern societies. Contraception is practised by approximately 50% of married couples in the world, by 70–80% in more developed nations and China, but by only 5–15% in many nations of sub-Saharan Africa (United Nations, 1996).

The sources of data for the estimates of contraceptive prevalence are usually self-reports in population surveys. The validity of self-reports of contraceptive use is usually difficult to assess. Validation studies are limited to clinic populations. There have been several studies of oral contraceptive use, where clinic records served as the reference (e.g. Nischan *et al.*, 1993). These studies in developed nations all found a fairly high validity for the self-reports. In developing nations, a validation in Machakos, Kenya, of women using three clinic methods – IUD, injection and oral

Table 1. Reliability of spousal reports of current and ever use of contraception in various studies

Country	Year of field work	No. couples	Agreement %	Agreement Kappa × 100	Author(s)
Current use					
Switzerland	1980	600	72	65	Hopflinger & Kuhne (1984)
Ghana	1988	400	73	48	Ezeh (1993)
	1993	514	89	59	Ngom (1997)
Kenya	1988/9	899	57	22	Ezeh (1993)
	1993	1239	84	61	Ngom (1997)
Taiwan	1969/70	1969	81	64	Coombs & Fernandez (1978)
Bangladesh	1993/4	3327	84	66	Macro International (1994)
Ever use					
Nigeria	1974	107	86	na	Mott & Mott (1985)
Bangladesh	1963	547	79	na	Yaukey *et al.* (1965)
India	1972	1902	33	na	Koenig *et al.* (1984)
Thailand	1975	2352	75	55	Institute of Population Studies (1977)

na: not available.

contraception – showed validity in the order of 80% for use over a ten year period (Maggwa *et al.*, 1993). There has been one validation of reports of condom use in the US (Zenilman *et al.*, 1995).

Reports of contraceptive use are critical for family planning programmes, as they project future need for commodities such as pills and condoms. In Bangladesh, a 'condom gap' appeared when researchers tried to reconcile records of large numbers of condoms provided through social marketing (92 million), with only 2% prevalence reported by women in a national contraceptive prevalence survey.

In the absence of validation, there are several ways to assess the reliability of reports of contraceptive use. First, the identical question can be asked of the same respondent in repeat interviews and the results compared. As part of the World Fertility Survey, a subsample of women in Fiji, Peru and Lesotho were re-interviewed within 2–4 months of the main survey. Reliability of reporting of ever use of contraception was 79%, 81% and 81% for kappa values of 51, 63 and 63 in the three respective countries (O'Muircheartaigh & Marckwardt, 1980; O'Muircheartaigh, 1984a, b). From interview–reinterview reports in Kwara State, Nigeria, it was found that only 19% of women who reported ever use of contraception at one visit or the other reported it at both visits (Becker *et al.*, 1995).

Another measure of reliability could be interviewing sexual partners (especially married couples) independently and comparing their responses. Table 1 lists studies that have compared reports of either current or ever use of contraception between spouses. The lowest concordance was for reports of current use in India and the highest was in Ghana (1993 DHS survey). Ever use is of course more difficult to compare.

The reason is that contraceptive use with a specific (e.g. current) partner is not usually specified in the question so some of the different reports from spouses on ever use would be mistakenly taken as an indication of unreliability when they were in fact true differences. Also, in this case the probability that there was use with (an)other partner(s) only increases with the passage of time so, *ceteris paribus*, older couples would have less reliable reports of ever use than would younger couples.

One matter that must be considered in reliability analyses is that with a binary response (use, non-use of contraception) there may be considerable agreement in reports due to chance alone. The kappa statistic was developed to adjust for such chance agreement (Cohen, 1960).

Another problem in comparing partner's reports of contraceptive use is that the time reference may be ambiguous depending on the method used. For example, responding to the Demographic and Health Survey (DHS) question 'Are you currently doing something or using any method to delay or avoid getting pregnant?' is straightforward if the method is vasectomy or tubal ligation. However, the accurate response to this question is unclear if the method is the condom and it is used irregularly or is used for STD prevention rather than avoidance of pregnancy.

A related reason for discrepancies in reports is social acceptability of contraception. It is well known that reports of socially deviant behaviours are more prone to reporting error than reports of other behaviours. In sub-Saharan Africa, contraceptive use is low in most countries (United Nations Publications, 1996) and has not yet reached the level of social respectability. This may have been a reason for the low reliability of reports of ever use in Nigeria in the study cited above.

Ezeh & Mboup (1997) published an article on gender differences in contraceptive prevalence rates using DHS data from the Central African Republic (CAR), Ghana, Haiti, Kenya and Zimbabwe. The authors calculated contraceptive use rates by method for husbands and wives and found that husbands in all surveys reported periodic abstinence more often while most often wives reported slightly higher prevalence of the pill, IUD and female sterilization. In multivariate analyses of spousal agreement, discussion of family planning and women's education both significantly increased the odds of agreement in several countries. Unfortunately the authors included polygamous couples, which is problematic because a polygamous husband gave only one report of contraceptive use without reference to any one wife, so it may or may not be with any given wife!

Data and methods

As of early 1997, Demographic and Health Surveys (DHS) that included both males and females (with the possibility of husbands and wives being sampled in the same household) had been conducted in over 40 nations. The DHS instruments are critically reviewed and approved by the ethical committee of the respective country. The DHS sample designs call for a subsample of males; this was usually accomplished by interviewing all males of reproductive age in every third or fourth household in which female interviews were done. The age ranges used for men differs in the various national surveys (Table 2). In each of the surveyed households where both sexes were interviewed, men and women were interviewed separately by an interviewer of the

Table 2. Number of men, women and couples by DHS survey

Country	Survey year	Age range for men (years)	Number[a] of: Women	Men	Couples	Monogamous couples[b]	Couples with no other partner[c]
Burkina Faso	1992/3	18+	6354	1845	1149	561	493
Central African Republic	1994/5	15–59	5884	1729	944	687	616
Ghana	1993	15–59	4562	1302	547	424	402[d]
Ivory Coast	1994	15–59	8099	2552	1038	689	552
Tanzania	1991	15–60	9238	2114	932	708	621
Zimbabwe	1994	15–54	6128	2141	698	592	561

[a]Unweighted.
[b]Both husband and wife report monogamy.
[c]Both husband and wife report no other partners.
[d]Only husband's data on sex with other partners are considered (data for wives are not available).

same sex. Thus the couple data are in addition to data on any other males and females in the household. In principle it is best to have the husband and wife interviews done simultaneously to avoid 'contamination', which could occur if one spouse talked with the other about the questionnaire content before the second interview. In practice, in the DHS it was often impossible to conduct interviews simultaneously since (a) one male worker in a team had to interview males in households from the workload of three to five female interviewers; and (b) males were in general less likely than females to be available when interviewers reached any given household. Thus husband response rates are also lower than those for wives.

The focus of this research is sub-Saharan Africa. Since couple differences in current contraceptive use could be due to use with other partners, it was decided to include only surveys (available as of February 1997) that also collected information on sexual intercourse with other partners in the recent period. Table 2 gives summary information about the six surveys included (Burkina Faso, CAR, Ghana, Ivory Coast, Tanzania and Zimbabwe). For the main analyses, polygamous union couples were excluded because the male report of contraceptive use is not linked to any particular wife, which makes meaningful spousal comparisons virtually impossible. Using similar logic the couples in which either spouse reported sexual intercourse with other partners in the recent period were also excluded. Couples were matched using line number identifiers of the wife (wives) in the male questionnaire. The number of couples varied from about 500 in Ghana to over 1100 in Burkina Faso. The percentage of couples in polygamous unions ranged from 2% in Zimbabwe to 21% in Burkina Faso. After exclusion of polygamous couples and monogamous couples in which either partner reported another sex partner in the recent period, the numbers varied between 400 and 600 (Table 2).

One objective of this research was simply to document the levels of consistency of spousal reports of current contraceptive use, including method-specific consistency. In addition, from the literature review the following hypotheses have been developed to test intra-couple reporting consistency of contraceptive use:

Hypotheses

(1) Observed discrepancies between partners' reports will be consistent with surreptitious use.
(2) The level of discrepancies will decline with increasing educational attainment of the partners and with modernization and socioeconomic status of the household.
(3) Condom use will be reported to be consistently higher by husbands and the discrepancy will persist even among couples where the male does not report any other sexual partners besides his wife.
(4) If there is any way to measure validity, women's reports will be more valid.

The DHS samples for five of the six surveys (Ghana is the exception) are not self-weighting so weights are needed to derive nationally representative results. Though an appropriate couple weight could be derived from the individual probabilities of selection and successful interview for each partner, these probabilities

are not available from and cannot be derived with variables in the public-use DHS data sets. Therefore the sample weights were used for women in the couple; in the presence of polygamy, these are more appropriate than the male weights. Adjustments for clustering were ignored because the average number of couples per cluster ranged from only 1·4 in Ghana to 5·0 in Burkina Faso, and these numbers were approximately halved when considering only couples with no other reported sex partners.

The outcome variable is agreement or disagreement of spouses with regard to contraceptive use. As stated above, unless otherwise indicated, samples were restricted couples in which both partners said that the husband had no other wives and in which neither spouse reported other sex partners in the recent period. In Burkina Faso and Ivory Coast, the reference period for the question 'sex with other partners' was two months whereas the reference period was four weeks in CAR, Ghana, Tanzania and Zimbabwe. The cross-tabulated responses of husbands and wives regarding current use are re-coded into the following groups: yes/yes and same method; yes/yes but different methods; husband no and wife yes; wife no and husband yes; both wife and husband no. Couples in which both partners state that they are using a method but report different methods could be considered as either disagreement or agreement. The following possible classifications for the agreement category were considered:

(1) Agreement on use and method used.
(2) Agreement on use and method used or different methods reported but there is consistency in that the two methods could have been used simultaneously or surreptitious use is possible. The list of differing reports that are considered consistent is given in Appendix Table 1.
(3) Simple agreement on use without regard to method.

Note that agreement will be lowest using the first classification and highest using the third. For the main analyses of this paper the second classification was used. Since one could debate the decisions regarding differing contraceptive reports that are considered consistent, the other two groupings were also used and in one sense constitute a sensitivity analyses for the classification system.

Method-specific indices of agreement were also calculated. More precisely, two types of ratios were calculated: (1) the proportion of wives (husbands) reporting a given method whose spouses report the same or a consistent method and (2) the ratio of the number of couples with both partners reporting the method to the number with either reporting it. These ratios were only calculated for methods reported by at least eight wives to avoid the problem of very large sampling fluctuations. Sample weights were not used in constructing these ratios since they could mask the differences of interest.

In another approach to exploring whose report might be more correct, contraceptive methods reported by husbands whose wives stated that they were currently pregnant were examined. Assuming the report of pregnancy is correct and that current contraceptive use would therefore be unnecessary, it can be deduced that any husbands who reported such use were in error, at least with respect to the spouse.

To analyse determinants of agreement selected covariates that were available in all surveys were considered: age and education of each spouse, duration of marriage,

Table 3. Descriptive statistics of selected covariate for samples of couples, by country[a]

Variable	Country					
	Burkina Faso	Central African Republic	Ghana	Ivory Cost	Tanzania	Zimbabwe
Means						
Age (in years)						
Wife	28·8	29·8	31·0	28·9	29·6	29·7
Husband	38·1	35·3	37·8	36·9	37·3	36·1
Duration of marriage (in years)	11·7	12·6	12·1	11·1	11·8	11·5
Education (in years)						
Wife	0·9	1·7	4·8	1·7	3·9	6·5
Husband	1·5	4·6	6·9	3·7	5·0	7·6
Children ever born to wife	3·8	3·7	3·6	3·8	3·9	3·4
No. items owned by household[b]	1·6	0·8	1·2	1·4	0·7	1·2
Percentage of couples						
With urban residence	39	36	32	39	19	34
With electricity in household	12	4	29	33	7	30
Who discussed family planning (wife's report)	32	41	48	83	37	7[c]

[a]Weighted by women's weights.
[b]Possible items are: radio, television, refrigerator, bicycle, motorcycle and car.
[c]In Zimbabwe husband was one in a non-probed list of possible persons whom the women could report she discussed family planning with in the last six months.

number of children ever born, urban or rural residence, presence or absence of electricity in the household, discussion with the spouse about family planning in the past year and number of specific items owned by the household. (Items were: radio, television, refrigerator, bicycle, motorcycle and car.) The reference period for 'discussion of family planning with husband' was one year in Burkina Faso, Ghana, Ivory Coast and Tanzania; it was 6 months in CAR and Zimbabwe. Table 3 shows descriptive statistics for these covariates. As could be expected there is little variation in wives' and husbands' ages, duration of marriage and children ever born between the surveys. But socioeconomic status varies greatly, with relatively high levels of female education in Zimbabwe, Ghana and Tanzania and low levels in Burkina Faso, CAR and Ivory Coast. In Burkina Faso most husbands have little or no schooling. The level of urbanization is similar (30–40%) in all the nations except Tanzania, which has only 19% living in urban places. There is quite a wide variation in the percentage of households with electricity from a low of 4% in CAR to a high of 33% in Ivory Coast.

For bivariate analyses ANOVA and *F*-tests for continuous variables and cross-tabulations for categorical variables were used. For multivariate analyses, the entire set of covariates regardless of significance of associations in bivariate results

were included. However, since contraceptive use is low in these nations, the logistic regression results are weighted by the large numbers of couples with both spouses reporting no use. In such a case the covariates will predict use/non-use rather than agreement/disagreement. Therefore the same models were fitted using data only for couples in which at least one spouse reported use. Ezeh & Mboup (1997) employed the same restriction in their analyses.

Logistic models were fitted with SAS software which uses the iteratively re-weighted least squares algorithm (SAS Institute, 2003). Goodness of fit of a model was assessed in the usual way by comparing the -2 log likelihood value with the appropriate chi-squared cutoff value. Individual coefficients were tested by the usual Wald statistic and odds ratios were estimated by exponentiation. In addition the pseudo r^2 value was computed. Differences of coefficients from zero were tested with the conventional 5% significance level but with a one-sided test for pre-specified hypotheses on one side of zero. For the sensitivity analyses the same covariates were included in the logistic model for each nation but the outcome variable was changed to either the dichotomous variable for exact agreement (yes/no) or simple agreement (yes/no) on use.

Results

Table 4 gives the distribution of couples by reported contraceptive use and various summary measures for the six countries. In the majority of couples in all nations except Burkina Faso and Zimbabwe, both partners report non-use of contraception. For all nations except Ghana and Zimbabwe there are more husbands who alone report use than there are couples in which both report use of the same method. Also couples in which the husband alone reports use outnumber those in which the wife alone reports use in all nations. This statement remains valid when those who report other sexual partners are excluded from the analyses. Among couples in which both partners report use, the majority report the same method except in Burkina Faso. Overall, approximately eight out of ten couples in each nation agree on the reports of current use; Burkina Faso is an outlier with slightly fewer than five out of ten giving identical reports on use. The summaries for those couples without other sexual partners (right panel) are similar with just slightly higher agreement than in the total sample.

From the rows labelled 'only' and the last row of Table 4, which gives ratios of numbers of husbands' to wives' reports, it is clear that husbands report use more than their wives do in all these nations. For couples without other sexual partners, these ratios are all above 1·5 (except in Zimbabwe); that is, for every three husbands who report use only two of their wives report use.

Since non-use dominates the percentages in Table 4, the three measures of agreement (for couples with no other partners) are given as percentages of the number of couples where at least one partner reported use. Among these, in only Ghana and Zimbabwe did over half of the couples have both spouses agreeing on use; in the other nations less than 40% agreed on use; the percentages ranged from 14% in Burkina Faso to 65% in Zimbabwe.

To give further insight into the nature of the inconsistencies, Table 5 gives method-specific reports for spouses. As can be seen from the left panel, husbands in

Table 4. Percentage distribution of couples' reports of current contraceptive use, measures of agreement (percentage) and ratio of number of husbands who report use to number of wives who report use, by group of couples and country

	All couples						Couples with no other partners					
Measure	Burkina Faso	CAR	Ghana	Ivory Coast	Tanzania	Zimbabwe	Burkina Faso	CAR	Ghana	Ivory Coast	Tanzania	Zimbabwe
All couples												
N	1149	944	547	1038	932	698	493	616	402	552	621	561
%	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0	100·0
Complete distribution												
Either or both reports use	58·6	30·3	35·3	22·5	24·7	66·3	54·8	29·5	35·3	19·9	26·7	66·0
Both report use	19·2	6·6	18·3	6·4	6·9	45·0	20·9	6·9	20·1	6·7	8·4	47·6
Same method	5·6	4·3	13·7	4·7	4·9	40·8	7·9	5·0	15·4	4·9	6·0	43·0
Different method	13·6	2·3	4·6	1·7	2·0	4·2	13·0	1·9	4·7	1·8	2·4	4·6
Only wife reports use	8·4	5·7	3·7	4·4	3·9	7·0	7·1	5·4	2·0	3·6	4·0	6·6
Only husband reports use	31·0	18·0	13·3	11·7	13·9	14·3	26·8	17·2	13·2	9·6	14·3	11·8
Neither reports use	41·4	69·6	64·7	77·5	75·2	33·7	45·2	70·5	64·7	80·1	73·3	34·0
Summary measures												
Total exact agreement	47·0	73·9	78·4	82·2	80·1	74·5	53·1	75·5	80·1	85·0	79·3	77·0
Total possibly consistent reports	57·7	75·2	81·7	83·3	81·3	77·0	63·5	76·5	83·3	85·7	80·7	79·5
Total agreement on use	60·6	76·2	83·0	83·9	82·1	78·7	66·1	77·4	84·8	86·8	81·7	81·6
(Kappa statistic)	0·21	0·23	0·57	0·36	0·35	0·57	0·31	0·26	0·63	0·43	0·38	0·63
No. husbands who report use/ no. wives who report use	1·82	1·99	1·44	1·66	1·93	1·14	1·70	1·65	1·51	1·54	1·83	1·10

Table 5. Reports of current contraceptive use by method, country and sex for married couples, with no other partners, and ratios of reports[a,b]

		Marginal distribution			Couples' reports			
		Counts		Ratio	Counts	Ratios[c]		
Method	Country	Him	Her	Him/Her	Both	Him[c]/Her	Her[c]/Him	Both[c]/Either
Pill	Burkina Faso	26	23	1·13	16	74	62	55
	Ghana	20	12	1·67	8	83	40	46
	Ivory Coast	16	12	1·33	10	83	63	56
	Tanzania	23	20	1·15	16	80	74	67
	Zimbabwe	246	226	1·09	201	92	83	77
Condom	Burkina Faso	29	12	2·42	5	83	48	50
	Ghana	40	21	1·90	17	95	55	55
	Tanzania	22	10	2·20	7	90	45	48
	Zimbabwe	23	8	2·88	5	88	64	65
Injection	Zimbabwe	18	20	0·90	16	85	94	77
IUD	Burkina Faso	9	10	0·90	6	60	67	46
Female	Tanzania	9	12	0·75	9	75	100	75
sterilization	Zimbabwe	5	8	0·63	5	63	100	63
Periodic	Burkina Faso	36	30	1·20	11	77	53	35
abstinence	CAR	58	15	3·87	3	33	16	9
	Ghana	32	29	1·10	16	90	56	49
	Ivory Coast	46	24	1·92	12	63	33	29
	Tanzania	61	25	2·44	6	36	16	13

[a]Data are shown where at least eight women reported the method.
[b]Calculations in this table are appropriately done with unweighted data.
[c]The denominators of these ratios are the numbers of husbands (wives or either in the respective columns) who report method *i*. The numerator is the number of spouses (of those in the denominator) who report the same method or a method which is possibly consistent with that reported by the spouse (see Appendix Table 2).

every nation report more use of the pill, condom and periodic abstinence than do their spouses. On the other hand in surveys where there are sufficient numbers of cases, wives report greater use of injection, IUD and female sterilization than do their husbands. These patterns are consistent across nations.

The right panel of Table 5 shows couple-level comparisons. For the ratios, the denominator is the number who report the method and the numerator is the number of their spouses who report the same method or a possibly consistent method. For the pill, in each country if the wife reports use, the husband reports use of the pill or another (consistent) method 70–90% of the time. However, if the husband reports use of the pill, the wife only concurs 40–80% of the time. From the method-by-method cross-tabulation (not shown), when the husband reports pill use and the wife does not, most often she reports no use of contraception. Among couples in which the husband reports pill use and the wife does not, her report is non-use of contraception

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in the following proportions of cases: 7 of 10 in Burkina Faso, 2 of 2 in CAR, 8 of 12 in Ghana, 5 of 6 in Ivory Coast, 6 of 7 in Tanzania and 35 of 45 in Zimbabwe.

For condoms, if the husband reports use, only about half of the time does the wife report use of condoms or another method consistent with that report. However, if the wife reports condom use, the husband about 90% of the time (in the four surveys with sufficient numbers) reports either condom use or another method consistent with her report (e.g. he reports withdrawal). For female sterilization, whenever he reports the method, the wife also reported it (values of 100% in column 7), but the reverse was not true.

The last column of the table gives the percentage of couples where both report a method (or give consistent reports) out of those in which either partner reports the method. Periodic abstinence has the lowest concordance and pill use and condom use have higher and similar levels of concordance. Despite small numbers, none of the 95% confidence intervals for these percentages includes 100% so lack of concordance is a significant occurrence for all of these methods.

Regarding hypothesis (1), the data on injections, IUD and female sterilization are consistent with wives' surreptitious use, as are the higher reports of condoms by males. Of course, other explanations are also possible: for example husbands may forget that their wives are using the IUD or injections. The higher reports of pill use by husbands than by their wives are not consistent with surreptitious use, and whether it is over-reporting by the husband or under-reporting by the wives is impossible to determine from these data alone.

In the logistic regressions the possible determinants of agreement/disagreement were examined. As a value of 1·0 represents agreement, positive coefficients denote covariates that increase the likelihood of agreement while negative coefficients reflect the opposite tendency (Table 6). Identical initial models were fitted for each country and then variables with a significance level less than 0·10 in any country were included in the same final model for each country in order to facilitate comparisons. As can be seen from the table, none of the covariates were significant in all nations, and in the CAR no covariate had significant associations. Increases in woman's education were positively associated with spousal agreement in all surveys but only significantly so in Burkina Faso and Ivory Coast. The number of items owned also has a significant positive association in Ghana and Zimbabwe.

In the sensitivity analysis (Appendix Table 2), the coefficients for all covariates in all three models are consistently either above or below 1·0, though significance levels change. One result is striking. In Burkina Faso and Tanzania the odds ratio for the variable 'discuss family planning with husband' is much higher when the criteria for agreement is that both report the same method. One obvious interpretation of this is that discussion with the spouse is more crucial for both partners to correctly identify the current method they are using than it is to simply agree on use. Note that the number of significant covariates is higher in the model for any use. Since the numbers agreeing on use is higher than for either other classification, there is more information to estimate the coefficients with greater precision in the models with this outcome.

In one possible test of validity, Table 7 shows that between 3% (in CAR) and 26% (in Burkina Faso) of husbands of pregnant wives reported current use of a contraceptive method. The most commonly mentioned method in Burkina Faso, Ivory Coast

Table 6. Odds ratios of couples' agreement regarding current contraceptive method used[a] as a function of the selected characteristics of couples[b]

Covariate	Country					
	Burkina Faso	CAR	Ghana	Ivory Coast	Tanzania	Zimbabwe
Place of residence						
Urban	0·73	0·76	1·87	4·43*	0·35	1·30
Rural (ref.)	1·00	1·00	1·00	1·00	1·00	1·00
Electricity in household						
Yes	1·27	1·56	0·56	0·52	7·11**	0·61
No (ref.)	1·00	1·00	1·00	1·00	1·00	1·00
Number of items owned	0·89	0·92	1·49*	1·71*[c]	1·15	1·37*
Education of wife (years)	1·16*	1·06	1·06	1·23*	1·15	1·07
Age difference (years)	1·01	1·01	1·00	0·90*	1·00	0·97
Duration of marriage (years)	0·97	0·94	1·07	0·95	0·98	0·86**
Number of children ever born to women	1·08	1·24	0·83	1·17	1·05	1·41**
Discussed FP with husband:						
Yes	1·74	1·04	2·54*	0·47	3·88*	1·48
No (ref.)	1·00	1·00	1·00	1·00	1·00	1·00
Model chi squared (8 df)	16·44*	5·02	20·66**	24·03**	30·69**	45·61**
Number of couples (*N*)	(265)	(181)	(138)	(110)	(151)	(368)

[a]Including possibly consistent reports.
[b]Weighted by female sample weights to obtain nationally representative estimates.
[c]One-tailed test of significance.
ref.: reference category.
*$p<0·05$; ** $p<0·01$.

Table 7. Percentage of husbands who reported current use of contraception but whose wife was currently pregnant, by country

Measure	Country					
	Burkina Faso	CAR	Ghana	Ivory Coast	Tanzania	Zimbabwe
Number of wives reporting a current pregnancy	65	111	57	98	96	72
Percentage of husbands (of these wives) reporting use of a contraceptive method						
All methods	26	3	16	6	12	10
Female or couple methods (not condoms or vasectomy)	26	2	7	6	10	10

and Tanzania was periodic abstinence while in Ghana it was condoms and in Zimbabwe, the pill. Given that these husbands also reported no other sex partners, from these results it can be concluded that some husbands do over-report use.

Discussion

In the demographic transitions of the late 20th century, increases in use of modern contraception were the major reason for fertility decline. Thus contraceptive prevalence is a crucial indicator of family planning programme performance. Up until now, women's reports of contraceptive use in demographic surveys have provided the information for calculation of this prevalence rate. However, the validity of such reports is called into question when it is found that the husbands of these women quite often give different reports. The purpose of this paper was to further document the levels of such discrepancies and search for explanations of these.

In the Demographic and Health Surveys from six sub-Saharan African nations studied here, there was less than 80% agreement in all except Ivory Coast. These discrepancies persisted when the analyses were restricted to only monogamous couples with neither spouse reporting other sex partners. Further, most of this agreement was in reports of non-use; when couples with either or both reporting contraception were considered, agreement are *much* lower. Only in Zimbabwe do a majority of such couples agree on the specific method.

These low levels of agreement are disturbing unless the husbands' reports can be dismissed and use continues to be estimated as that reported by currently married women, as was done before men were included in Demographic and Health Surveys. In the case of a discrepancy in sub-Saharan Africa, it seems more likely that the wife's report is correct for the couple. This can be deduced from the following: (a) some husbands reported current use of female methods at a time when their wives reported a pregnancy, (b) virtually all of the methods are used either by or with the knowledge

of the woman and, with the exception of condoms, this is not the case for men, (c) Ezeh & Mboup (1997) found that half or less of husbands who reported use of periodic abstinence, knew when the fertile period was, and (d) husband's reported use (especially the condom) when the wife reports no method could be associated with unreported extramarital coitus.

With regard to the hypotheses at the outset of this research, it can be seen that data on injections, IUD and female sterilization are consistent with surreptitious use of these methods by women but the data on pill use are not. Whether the higher reports of pill use by husbands than their wives represent under-reporting by the wives or over-reporting by their spouses is unclear, but given that some husbands reported pill use when their wives were pregnant, some over-reporting must exist. Hypothesis (2) was supported by the significant positive effects of women's education on agreement in Burkina Faso and Ivory Coast and the positive coefficients in the other nations. Economic variables – number of items owned and presence of electricity – were also associated positively with agreement. The expected pattern of higher reports of condom use among husbands was confirmed (hypothesis (3)). It was impossible to compare the validity of women and men's reports (hypothesis (4)); however, it was possible to detect that some husbands' reports were invalid.

Ezeh and Mboup, in their study of couples' reports, concluded by suggesting, as here, that husbands were more likely to over-report use than women were to under-report use, partly based on the observation that many husbands reporting use of periodic abstinence had inaccurate knowledge of the ovulatory cycle.

One source of the problem of spousal disagreement that could be corrected relatively easily is the vague wording of the question: 'Are you currently doing something or using any method to delay or avoid getting pregnant?' The time reference 'current' is imprecise. Incorporating a specific time reference for current use should lead to lower discrepancies. Probing of knowledge of the ovarian cycle among those who report use of periodic abstinence as suggested by Ezeh and Mboup is another way to assess accuracy of reporting. Where there is polygamy, the husband can be asked about contraceptive use with specific partners; this has already been implemented starting with the 1996 Tanzania DHS.

Becker and Costenbader (2001), in their study, compared couples' concurrence on contraceptive use and method used by means of data from 23 countries, mostly in sub-Saharan Africa. They found that husbands report higher level of contraceptive use than do their wives in every country they studied, with ranges 2% higher (Brazil) to 150% higher (Mali). The authors mentioned that many of the discrepancies are the result of husbands' sole reports of periodic abstinence and condom use.

The incorporation of men in reproductive health programmes is a recommendation from the 1994 International Conference on Population and Development (United Nations, 1995). In three of the six nations studied here the agreement on use of contraception is highly associated with discussion of family planning. As contraceptive use becomes socially acceptable in sub-Saharan Africa, spouses can be encouraged via the media, family planning programme personnel and others to discuss these matters and to the extent that this happens, husband and wife reports of contraceptive use can be expected to be more in agreement. In the interim, large discrepancies between spouses should give pause to those wanting to employ contraceptive use as an outcome variable at the individual level.

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Appendix

Table A1. Matrix showing possibly consistent and inconsistent reports of contraceptive method use between spouses

Method reported by wife	Method reported by husband											
	Pill	IUD	Injection	Diaphragm	Condom	Female sterilization	Male sterilization	Rhythm	Withdrawal	Other	Abstinence	Norplant
Oral pill	a	x	x	x	✓	x	✓	x	✓	x	✓	x
IUD	x	a	x	x	✓	x	✓	x	x	x	✓	x
Injection	x	x	a	x	✓	x	✓	x	✓	x	✓	x
Diaphragm	x	x	x	a	✓	x	✓	x	✓	x	✓	x
Condom	✓	✓	✓	✓	a	x	x	✓	✓	x	x	x
Female sterilization	x	x	x	x	✓	a	✓	x	✓	x	✓	x
Male Sterilization	x	x	x	x	x	x	a	x	x	x	x	x
Rhythm	x	x	x	x	✓	x	✓	a	✓	✓	x	x
Withdrawal	x	x	x	x	✓	x	✓	✓	a	✓	x	x
Others	x	x	x	x	✓	x	✓	x	x	a	✓	x
Abstinence	x	x	x	x	✓	x	x	x	x	✓	a	x
Norplant	x	x	x	x	✓	x	x	x	x	x	x	a

✓ Consistent reports (e.g. surreptitious use possible).
x: inconsistent reports.
a: agreement between spouses on method use.

Table A2. Odds ratios for covariates with significant effects (in at least one model) in prediction of agreement on current contraceptive use by country and model

Country	Variable	Model for: Reports of any method use	Consistent reports of method use	Exact reports of method use
Burkina Faso	Place of residence: urban	(1·28)	(0·73)	3·87
	Education of wife	1·13	1·16	1·20
	Discussion of FP with husband	1·87	(1·74)	4·44
Ghana	No. items owned	(1·44)	1·49	(1·41)
	Discussion of FP with husband	3·43	2·54	(2·07)
Ivory Coast	No. items owned	(1·16)	(1·71)	(1·76)
	Place of residence: urban	3·73	4·43	(3·41)
	Education of wife	1·24	1·23	(1·16)
	Age difference between husband and wife	0·89	0·90	0·86
Tanzania	Place of residence: urban	(0·32)	(0·35)	0·23
	Electricity in household	12·38	7·11	(3·51)
	Discussion of FP with husband	4·37	3·88	12·14
Zimbabwe	Electricity in household	0·41	(0·61)	(0·63)
	No. items owned	1·41	1·37	1·32
	Duration of marriage	0·88	0·86	0·88
	No. children ever born to women	1·34	1·41	1·33

Note: Figures within parentheses are not significant at $p<0·05$ level.