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## The social and cultural consequences of being childless in poor-resource areas

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### Introduction

Approximately 70-80 million couples world wide are currently infertile (Bos *et al.*, 1995; Boivin *et al.*, 2007) and it can be estimated that tens of millions of couples are primary infertile or childless. For most people, having children is immensely important; not being able to have children is a major life problem. There is also a large group of women and men, who have children, possibly from a previous relationship, who desperately want to have another child. A considerable body of research in Western countries has shown that involuntary childlessness has strong psychological consequences (see for reviews: Greil, 1997; Brokovich and Fisher, 1998). Most of the studies carried out in this domain are quantitative and some are qualitative. Both kind of studies, point in the same direction: there are various psychological and psychosomatic effects, and especially women are affected. The most frequently mentioned effects are distress, raised depression and anxiety levels, lowered self-esteem, feelings of blame and guilt, somatic complaints, and reduced sexual interest. For a small minority of women and men in the Western world these effects are at a clinical level or can be considered extremely serious (Greil, 1997).

It is interesting that social and cultural consequences are seldom mentioned in the reports on these studies. When these aspects are considered, they are often related to studies about elderly people without children, regardless of the reason for being childless. It is stressed in the reports of these studies that frail old people without children have less social support (cf., Johnson, 2006) and a less robust network for independent living compared to old people with children (cf., Wenger *et al.*, 2009). Wirtberg and co-workers (2007) however, carried out a study that is unique in the sense that it aims at elderly involun-

tarily childless women. They reported on 14 women, and described that in all cases but one sexual life was affected negatively and that half of these elderly childless women were separated.

Some studies, report the difficulty that childless couples have in communicating with friends who do have children. They describe negative (although sometimes well-meant) remarks within the couples' social worlds, for instance at birthday parties and other social gatherings; however, supportive reactions are also mentioned very often (Greil, 1991; van Balen *et al.*, 1996; Schmidt, 2006). It is possible for childless couples to participate in the 'world of children', especially if couples have good friends or relatives who have children. They are able to participate in the lives and activities of the children of their friends and relatives by, for instance taking care of the children for a part of the week or when the parents are on holiday; taking the children to school, music lessons or sports activities; or going to games or shows in which the children participate. An early study on childlessness found that about ten per cent of couples had chosen this strategy as a way of coming to terms with their childless life (van Balen, 1991) Also, recently Wirtberg and colleagues (2007) described this as typical coping strategy for childlessness. It appears that in the West childless people are not formally excluded from being involved with raising children.

In the 1990s, studies were published about the effects of childlessness in developing countries. The focus of these studies was different from studies carried out in the West. Although psychological effects are described, the main concerns are social and cultural effects (van Balen and Inhorn, 2002). This paper presents a review and an analysis of the results of the studies done to date in poor-resource areas regarding the social and cultural effects of being childless.

## Methods

### *Literature search*

To collect the studies, four Internet online databases were searched. These were Web of Science, Academic Search Premier, Science Direct and PiCarta. The following search terms were used on subject areas: 'childless/childlessness' combined with 'consequences/effects' and 'infertile/infertility' combined with 'social consequences/effects'. In addition, chapters were collected from three edited volumes, namely Social Science Research on Childlessness in a Global Perspective (2000), Women and Infertility in sub-Saharan Africa (2001) and Infertility Around the Globe, New Thinking on Childlessness, Gender and Reproductive Technologies (2002). Finally papers that were possibly additional to the Internet search, were collected from special issues of journals on the topic of infertility in poor resource areas, viz: Patient Education and Counseling (1997, 2005), Reproductive Health Matters (2002), Journal of Infant and Reproductive Psychology (2004), Journal of Psychosomatic Obstetrics and Gynaecology (2007). By using the search term infertile/infertility (which may comprise secondary infertility) studies that involved women or men who want to have another child, were included in the database.

### *Interpretative phenomenological analysis*

A method based on interpretative phenomenological analysis (IPA; Smith and Osborn, 2004) was used to order the results reported in the studies. IPA is especially useful in exploring and ordering new topics (Chapman and Smith, 2002). This method is normally used in empirical studies, in this case however it was adapted for application to a literature review. The adaptation process started from a certain framework of analysing and grouping results, followed by recoding and regrouping of the results, adapting the framework definitions of concepts, and then re-assessing and improving the way the findings of the various studies were ordered so as to establish the final framework and definitions of concepts and to locate the results in the categories and levels. To improve coherence and consistency, the co-author also coded categories, levels and frequency indications of a quarter of the studies and evaluated the concepts and assessed the framework. In this way, the results reported in the various studies were ordered into categories, intensity levels and frequency ranges.

### *Categories of consequences*

Consequences were initially categorized according to four fields in which effects are mentioned in the

various reports, namely the social, economic, legal and religious fields. While carrying out the rounds of IPA described above, it appeared more feasible to adapt these four categories. In-law effects were added to the 'economic' category because there were often essential economic effects attached to problems in the relationship with the in-laws. Couple relationships with extended family appeared to be a separate issue from 'within couple effects' which were coined 'marriage effects'. Marriage effects, such as marital instability and possible divorce, often appeared to be associated with other legal effects and were therefore added to the 'legal' category. Social effects were renamed 'community effects', in order to disentangle them from the more general use of the term social (e.g. 'social sciences' or 'social life'). The category 'religious' was augmented with the aspect 'spiritual', because this aspect was mentioned in some of the studies.

### *Intensity of effects*

Several levels of intensity within each category were used to describe the effects. It was convenient to consider four levels for each category and to include in each category effects that have roughly the same intensity.

*Community effects* (from lowest to most intense level): (i) status loss, including no respect and being a social failure; (ii) ridicule, including insults and verbal abuse; (iii) stigmatization or recognizable marginalization; and (iv) isolation, including exclusion (from ceremonies and social gatherings), rejection, being an outcasts and physical abuse perpetrated by community members.

*Economic and in-law effects* (from lowest to most intense level): (i) costs of treatment (biomedical or traditional); (ii) no economic security, including no care in old age, no economic support from others, unable to find work, no connections and restricted land use; (iii) harassment, pressure and rejection by in-laws; and (iv) exploitation and abuse perpetrated by in-laws.

*Legal and family aspects* (from lowest to most intense level): (i) inheritance restrictions, including other legal restrictions such as property rights and burial rights; (ii) marital instability, including fear of the husband taking a second wife or divorcing the childless woman; (iii) the husband actually having a second wife; and (iv) divorce, including also expulsion from the home and physical abuse and violence perpetrated by the partner.

*Religious and spiritual effects* (from lowest to most intense level): were ordered as follows (i) effects perceived by oneself: not to have children in order to fulfil religious obligations; (ii) diverse forms

of witchcraft attributed to the infertile person; (iii) having the 'evil eye' or being a considered a person whom it is better not to touch; and (iv) being considered a person who brings illnesses and disasters to the community.

### *Frequency of effects*

Because most of the studies that were collected were qualitative in character, the effects are often reported in descriptions, like 'almost all', 'common', 'frequently', and 'a few', 'one case'. It appeared most feasible to use three frequency ranges: (1) all, almost all, majority, most; (2) many, frequent, often, common, not uncommon; and (3) some, a few, one (in small samples). In some of the reports clear indications of the frequency of some or all findings are absent. However, it could be deduced from the context whether the effect could be ranked in one of the three levels. Nevertheless, in a considerable number of papers this appeared not possible and therefore the effects were not quantified for these studies.

## **Results**

### *The studies*

Thirty-nine studies into various social effects of childlessness in poor-resource areas were collected. Of these, 19 concerned areas in sub-Saharan Africa, and 13 concerned areas the Indian subcontinent (India, Pakistan, Bangladesh, Sri Lanka). Just two studies were found concerning North-Africa and the Near East and only one concerning a Latin American country.

Some studies were sociological in character, based on a large survey and presented quantitative data (Sundby 1997/1998; Unisa, 1999; Mulgoankar 2000a/2000b). In one of these (Sundby 1997/98), more sensitive issues were reported, that were collected through in-depth interviews in a smaller subsample. Four studies started with a psychological perspective (Denga, 1982; Fido and Zahid, 2004; Wiersema *et al.*, 2006; Donkor and Sandall, 2007). Donkor and Sandall (2007) and Wiersema and co-workers (2006) used a quantitative methodology to collect psychological and social data, while in the last authors also carried out semi-structured interviews on a subsample regarding socio-cultural aspects. Denga (1982) and Fido and Zahis (2004) reported on social effects but described only the methods used to collect psychological data.

The other studies had an anthropological approach, and employed various qualitative meth-

ods, mostly in-depth interviews with infertile people (see table 1). A few of these were based on a limited number of cases. The study by Riessmann (2000a/2002) used narrative analysis on three cases. Hollos (2003) and Hörbst (2008) performed out a qualitative analysis based on six, respectively two life histories. The report by Jenkins (2002) is a case study written in a novel-like style.

In several studies the number of the sample of infertile persons interviewed was absent (Neff, 1994; Boonmongkong, 2000; Feldman-Savelsberg, 2002). Also, in reports that used various sources of information, it is not always clear which source was the origin of the various results (Neff, 1994; Feldman-Savelsberger, 2002; Handwerker, 2002). Furthermore, a number studies were based not on information provided by infertile persons themselves but, for instance, on key-persons and focus group discussions (Okonufua *et al.*, 1997), attitudes in the general population and key Churchpersons (Pearce, 1999) or stories in newspapers and movies (Meyer, 1994). Only a few studies focused specifically on men (Dyer, 2004; Hörbst 2008). In the studies that included men, the focus was mainly on women (Bharadwaj, 2000; Nahar, 2000; Wiersema *et al.*, 2006).

Some papers had a limited perspective to start with and included only some aspects of childlessness, such as marital relational aspects (Denga, 1982), religious and spiritual effects (Meyer, 1994). Other studies were specifically focused on stigma (Apte *et al.*, 2004; Donkor and Sandall, 2007), identity, social construction and meaning (Neff, 1994; Kielman, 1998; Mariano, 2000/2004), treatment technology (Handwerker, 2002) and sexual dysfunction (Nene *et al.*, 2005). Most studies however, were not explicitly limited in focus with respect to the various social effects of childlessness. Sixteen of the reports listed at least effects in three of the social categories of effects, while 11 reports do so in two categories.

Regarding the settings, about half of the studies (18) were carried out within a community or were based on surveys in the community or the country. About the same number (15) were carried out in a medical setting or started out from a sample collected through clinics, gynaecologists and other health personnel. Two studies (Bahti *et al.*, 1999; Riessman, 2000b) used samples from a medical as well as a community source. Another report (Boonmongkong, 2000) did not specify the origin of the sample (see table 1).

The large majority (28) of studies concerned persons who were childless or primary infertile (never been pregnant). However, this is not always clearly specified in a methods section or the introduction, but could be deduced from the description and the

**Table 1.** — Social effects; reported in studies (in brackets indication of frequency reported; ni = no indication).

Study	Area/culture/class	Community effects	Economic and in-law relation effects	Legal and marriage effects	Religious/ spirit effects	Sample, and Methods	Setting and Focus Limitation (if explicitly mentioned)
<b>SUB-SAHARAN AFRICA</b>							
Sundby, 1997/1998	The Gambia Islam National	Verbal abuse (some) Stigma (ni)	–	Inheritance restricted (all) Marital instability (many) Fear of extra wife (often) Extra wife (some) Divorce (some)	–	243 infertile women questionnaire; 17 women and 2 men unstructured interview; 4 women in-depth interviews and keypersons	Countrywide survey Primary and secondary infertility
Meyer, 1994	Ghana Christian/spirits	–	–	–	Evil eye (ni) Witchcraft (ni)	Analysis based on stories in media	Newspapers, magazines and movies Having no children Limited to: Spiritual aspects
Donkor and Sandall, 2007	Ghana Urban and rura	Stigma (majority)	–	–	–	615 women waiting for treatment; Questionnaire based survey	Medical setting Primary and secondary infertility Limited to: Stigma
Denga, 1982	Nigeria Christian Urban	–	–	Marital instability (common) Extra wife (common) Divorce (common)	–	40 childless women and 40 controls; but no information about collection of social effects	Gynaecologists records Childless women Limited to: Marital relationship
Okonofua et al., 1997	Nigeria Yoruba Patrilocal	Outcasts (ni)	No economic security (often)	Inheritance restricted (often) Expulsion of the husbands house (common) Divorce (common)	Witchcraft (often)	Focus group discussions with key persons	Community setting Primary and secondary infertility
Koster-Oyekun, 1999	Nigeria Urban Patrilocal	Stigma (ni)	No economic security (common) Old age (common) Harassment by in-laws (ni) Exploitation (abuse) by in-laws (ni)	Fear of extra wife (ni) Fear of divorce (ni) Divorce (some)	Being a witch (ni)	In-depth interviews with 25 women confronted with infertility and several keypersons Questionnaire of school youths Semi-structured questionnaire among other women visiting traditional healers	Community-based Childless (barren) women

Pearce, 1999	Nigeria Yoruba	No respect (many) Ridicule (many) Stigma (margin) (many) Outcast (many) Exclusion ceremonies (all)	Old age (ni) No connections (all)	Burial rights (ni)	-	Based on 2 previous studies: attitudes of 104 men and women, and interviews and participant observation charismatic churchpersons	Community attitude about childlessness Being childless
Hollos, 2003	Nigeria Village Patrilocal	No respect (all) Stigma (margin) (all) Physical abuse (some) Exclusion (all)	No economic security (some)	Divorce (all) No right of residence (expulsion) (all)	-	6 women aged 30-80: life histories	Community based, household survey Childless (barren) women
Leonard, 2002	Chad Patrilocal Christian Urban	Ridicule (ni)	Rejection by in-laws (ni)	Marital instability (ni) Divorce (often)	-	Conversations with 21 self-defined infertile Women	Based on household survey (170 interviews) Self-defined infertility
Hörbst, 2008	Mali Urban	Status loss (ni) Verbal abuse (ni) Stigma (ni)	-	-	-	2 males with infertility (results based on one case) Participant observation and in-depth interviews	Medical setting Having no child
Feldman-Savelsberg, 2002	Cameroon Rural poor	-	Less gifts and less land (ni)	No property after divorce (ni) Fear of divorce (ni)	Witchcraft (ni)	Participant observation, and interviews with infertile women, husbands and keypersons No numbers given	Community level and medical personnel Childless (by implication)
Kielman, 1998	Tanzania Islam Villages	-	-	Divorce (often/common)	-	25 interviews with self-defined infertile women	Based on local health clinics Self-defined infertility Limited to: Identity of infertile women
Gijssels <i>et al.</i> , 2001	Tanzania Urban district	No respect (ni)	Old age (ni) Child labour (ni)	Marital instability (mostly) Extra wives (few) Divorce (most)	-	30 life histories of infertile women	Medical setting Primary and secondary infertility
Hollos and Larsen, 2008	Tanzania Urban	No respect (all) Verbal abuse (all) Stigma (all)	Harassment by in-laws (often)	Marital instability (often)	-	25 infertile and 23 fertile women; In-depth Interviews	Based on household survey Childless women

Gerrits, 1997/2002	Mozambique Rural Matrilineal	Stigma (all) Isolation (all) Exclusion (ceremonies) (all)	Lack support old age (almost all)	Fear of divorce (some)	-	Snowball 25 infertile women, 9 cured, 10 fertile, and keypersons; Semi structured interviews	Snowball starting from community level Childless women
Mariano, 1999/2004	Mozambique Rural Patrilineal	Stigma (fringe) (ni)	-	Fear of divorce (ni)	-	18 infertile women; informal interviews (3 cases reported on)	Community level Childless women Limited to: Meaning of childlessness
Upton, 2001	Botswana village area	Status loss (ni) Ridicule (ni) Isolation (ni)	-	-	-	Participant observation, Interviews and discussion with infertile persons, community leaders (no numbers given) and 17 traditional healers. Two case studies described	Community setting Primary and secondary infertility
Dyer, 2002	South Africa Urban	Status loss (some) Verbal abuse (many) Stigma (many)	-	-	-	27 men seeking treatment; In-depth interviews	Infertility clinic Partly men with child (secondary infertility)
Dyer, 2002	South Africa Urban	Ridicule/ verbal abuse (many) Stigma (many) Outcasts (many)	-	Marital instability (many) Fear of divorce (many) Physical abuse by partner (few)	-	30 women seeking treatment; In-depth interviews	Infertility clinic Partly women with child (secondary infertility)
<b>INDIAN SUB-CONTINENT</b>							
Bhatti <i>et al.</i> , 1999	Pakistan Low income Urban	Isolation (one)	Pressure by in-laws (one)	-	-	17 infertile women; In-depth interviews	Clinic and community based Having no children
Neff, 1994	India Tribe	Stigma (margin) (ni)	-	-	-	Anthropological fieldwork and case study (no numbers mentioned)	Community based No indication of kind of infertility Limited to: Social construction of infertility
Bharadwaj, 2000	India Several big cities	Stigma (almost all) Isolation (ni)	Harassment by in laws (ni)	-	-	45 semi structured interviews in IVF clinics (women and men)	IVF clinics Primary infertility (by implication)

Mulgoankar, 2000a/2000b	India Urban slum	Status loss (ni) Verbal abuse (ni) Stigma (ni)	Cost of IVF (some) Harassment by in-laws (ni)	Fear of divorce (ni)	-	225 childless couples semi-structured interviews (results based on women's reports)	Community based on household survey Being childless
Riessman, 2000a/2002	India Middle class	-	Harassment by in-laws (all) Exploitation by in-laws (one)	Fear of divorce (some)	-	Narrative analysis 3 childless women of upper class; In-depth interviews	Community based Childless women
Riessman, 2000b	India rural Kerala	Status loss (almost all) Ridicule (often) Stigma (all) Outcasts (some)	Pressure by in-laws (all)	Fear of divorce (some)	-	31 in-depth interviews with infertile women, participant observation	Infertility clinic and village based childless women
Unisa, 1999	India Villages	No respect (some) Verbal abuse (some) Stigma (common) Isolation and Exclusion (ceremonies) (frequently)	-	Fear of divorce (few) Extra wife (some) Physical abuse husband (some)	-	332 childless women: questionnaires; 60 childless women: semi structured interviews (not reported on)	Community based on household survey Childless women
Apte <i>et al.</i> , 2004	India Sex workers	Stigma (all)	-	-	-	107 childless female sex workers; Interviews and group discussion	Data collected in workplace area (community) Childless women Limited to: Stigma
Meera Guntupalli and Chenchelgudem, 2004	India Tribe	-	-	Divorce (some)	-	5 infertile, 22 cured and 11 fertile women. Participant observation, in-depth interviews, and informal interviews	Community based Childless women
Nene <i>et al.</i> , 2005	India Urban	Stigma (distinction) (almost all) Rejection (humiliation at gatherings) (almost all)	Harassment and rejection by in-laws (many) Exploitation by in-laws (very common)	-	-	40 couples with sexual dysfunction; Semi structured and in-depth interviews	Fertility clinic Childless couples with sexual dysfunction



Widge, 2005	India Middle class Urban	Verbal abuse (many) Stigma (many)	Cost of IVF (all) Rejection in-laws (some)	-	-	4 couples and 18 women in treatment; In-depth interviews	Infertility clinic Being childless
Nahar, 2000	Bangla Desh Poor urban	Status loss (many men) Ridicule (ni) Stigma (all women) Physical abuse (ni) Rejection (all women)	No work (many women) Rejection by in-laws (some women) Exploitation by in-laws (some women)	Fear of divorce (frequent women) Rejection by husband (many)	Not to touch (all women) Responsible for illnesses (one woman)	20 infertile women; In-depth interviews, and 60 men and women general population	Community based Being childless
Nahar, 2007	Bangla Desh Poor rural and middle class big city	Social failure (often) Stigma (all) (especially in rural area) Mobility restriction (Rural: mostly) Isolation (all)	Cost treatment (almost all) Old age (rural: mostly) Social Support (especially: rural) Child earnings (rural: mostly); Rejection in-laws (common)	Inheritance restricted (all) Fear of divorce (all) Fear of extra wife (all) Extra wife (rural: common)	-	Rural: community based Urban: personal network and snowball method 20 rural poor women, 11 urban middle class women and keypersons; Life story interviews	Community based and social network Being childless
<b>OTHER AREAS</b>							
Inhorn, 1994	Egypt Islam Urban poor	Stigma (ni) Rejection (ni) Exclusion (ni)	-	Fear of extra wife (ni) Fear of divorce (ni)	Evil eye (ni) Witchcraft (ni)	100 infertile women and 90 fertile women; Semi structured interviews	Hospital based Being childless
Fido and Zahid, 2004	Kuwait Islam Literate and Illiterate	Stigma (all)	-	Fear of divorce (some) Fear of violence (some)	-	120 women and 125 controls: but no information on collection of social effects	Hospital based No indication of kind of infertility Limited to: Psychological distress
Handwerker, 2002	China Big city	Social failure (ni)	-	-	Pious duties (ni)	100 women in treatment by questionnaire, 50 other women and 5 men semi-structured interviews, and interviews with various keypersons	Hospital based No child (by implication) Limited to: IVF as a new technology
Pashigian, 2000/2002	Vietnam Rural	Social failure (no respect) (some) Insults (some)	Treatment costs (ni) Old age (ni) Harassment by in-laws (ni)	Fear of divorce (some) Fear of extra wife (some)	Pious duties (frequently)	39 women in treatment, and 10 women with one child; Ethnographic interviews and life histories	Interviews in hospital Having no child

Wiersema <i>et al.</i> , 2006	Vietnam Big city	-	Cost of treatment (some) Old age (many) Pressure by in-laws (some)	Fear of divorce (frequent) Marital instability (not uncommon)	-	118 couples questionnaire psychological and medical aspects. Results based on 15 men and 13 women in treatment by semi- struc- tured interviews	Interviews in hospital Primary infertility
Boonmongkong, 2000	Thailand Bhoedhism	Stigma (some)	Rejection by In-laws (ni)	Fear of extra wife (all) Fear of divorce (all)	-	Interviews female Patients; No numbers given	No information about set- ting Primary infertility (by im- plication)
Jenkins, 2002	Costa Rica Roman Catholic Urban	Stigma (ni)	-	-	-	One childless couple fol- lowed for more than year; Life story	Landlord/ lady of researcher Childless couple

results (or by implication), and in one case based on state politics (Handwerker, 2002). This last mentioned paper was based on interviews with infertile women in China, at a time and in an area where a strict one child policy in force. Seven studies included primary and secondary infertility (having been pregnant before), or people who had a child in the current or previous relationship. Two reports used the concept of self-defined infertility; that is the woman defines her situation as infertile, irrespective of the medical or social definitions (Kielman, 1998; Leonard, 2002). In two papers the term 'infertile' was used without there being sufficient information to decide whether or not this included women with children (Neff, 1994; Fido and Zahid, 2004).

### *Social effects*

Community effects are mentioned in almost all reports (32). Stigma was mentioned the most (in 25 reports), while the highest intensity of community effects (isolation, rejection and exclusion) is mentioned in 14 reports. Status loss, social failure and no respect are also mentioned in 14 reports, as are ridicule and verbal abuse.

Economic and in-law effects are mentioned in most studies (21). In five of these, the effects concern the costs of infertility treatment, by either modern biomedicine or traditional medicine (e.g. healers or herbs). In 11 cases, economic insecurity is mentioned, for example no support in old age, receiving fewer gifts and less land, and having fewer relations. Harassment and feeling rejected by in-laws are mentioned in 15 reports, in four reports this was at the level of exploitation and abuse.

Legal and marriage effects were reported in 26 of the reports. In five cases, the effects concerned inheritance restrictions and restricted burial rights. Many (21) of the reports mention marital instability, fear of divorce or fear of the husband taking an extra wife. Five of the reports state that husbands had actually taken a second wife. Divorce, expulsion from the home or physical abuse perpetrated by the husband is mentioned in 11 reports.

Religious and spiritual effects are mentioned in a few (8) of the reports. In two reports these had to do with the thoughts and feelings of the infertile person, namely fearing that pious duties could not be carried out after one's death. The other cases concerned accusations of witchcraft: diverse forms of witchcraft were mentioned five times, having the evil eye or being considered a person one had better not touch three times, and considered someone who brings illnesses and disasters to others in one paper (see figure 1).

### *Frequency of incidence*

The frequency of incidence of at least one of the social effects of being childless was indicated in 30 of the reports. More than half of these reports mention status loss and ridicule as happening frequently or always. The majority of the papers indicate that stigma and isolation are happening to most of the infertile persons. Several of the other social effects, such as no economic security, harassment by in-laws and marital instability were reported in about half of the papers as happening often. In the papers that mentioned the frequency in which husbands have actually taken a second wife or actually divorced their wives this was described in about equal numbers as happening in a few cases or happening often (see figure 2).

### *Comparison of sub-Saharan Africa and the Indian subcontinent*

A comparison was made regarding the two regions in which most of the studies were carried out, namely sub-Saharan Africa (19 studies) and the Indian subcontinent (13 studies). The studies performed in the Indian subcontinent reported the most severe level of community effects (isolation) more frequently than the studies carried out in sub-Saharan Africa (54% vs 32%). Also, stigma was reported more often in the studies performed in the Indian subcontinent compared to these in sub-Saharan Africa (77% vs 53%). Harassment (69% vs 16%) and exploitation (23% vs 5%) by in-laws were also reported much more in studies carried out in the Indian subcontinent compared to these performed in sub-Saharan Africa. On the other hand, actual divorce as a consequence of being childless was more frequently reported in sub-Saharan Africa than in the Indian subcontinent (47% vs 15%). Also a lack of economic security was more often reported in the sub-Saharan studies compared to these in the Indian subcontinent (37% vs 15%) (see further figure 3).

### **Discussion**

Over the last decade, a substantial number of papers have been published about the social consequences of being childless in poor resource areas. This subject is thus getting at least some of the attention that was promised in the action plan of the International Conference of Population and Development in Cairo (ICPD, 1994), which for the first time included infertility care in its goals for reproductive health. However, it is remarkable that most of the studies were carried out in sub-Saharan Africa and the Indian subcontinent. Almost no papers have been pub-

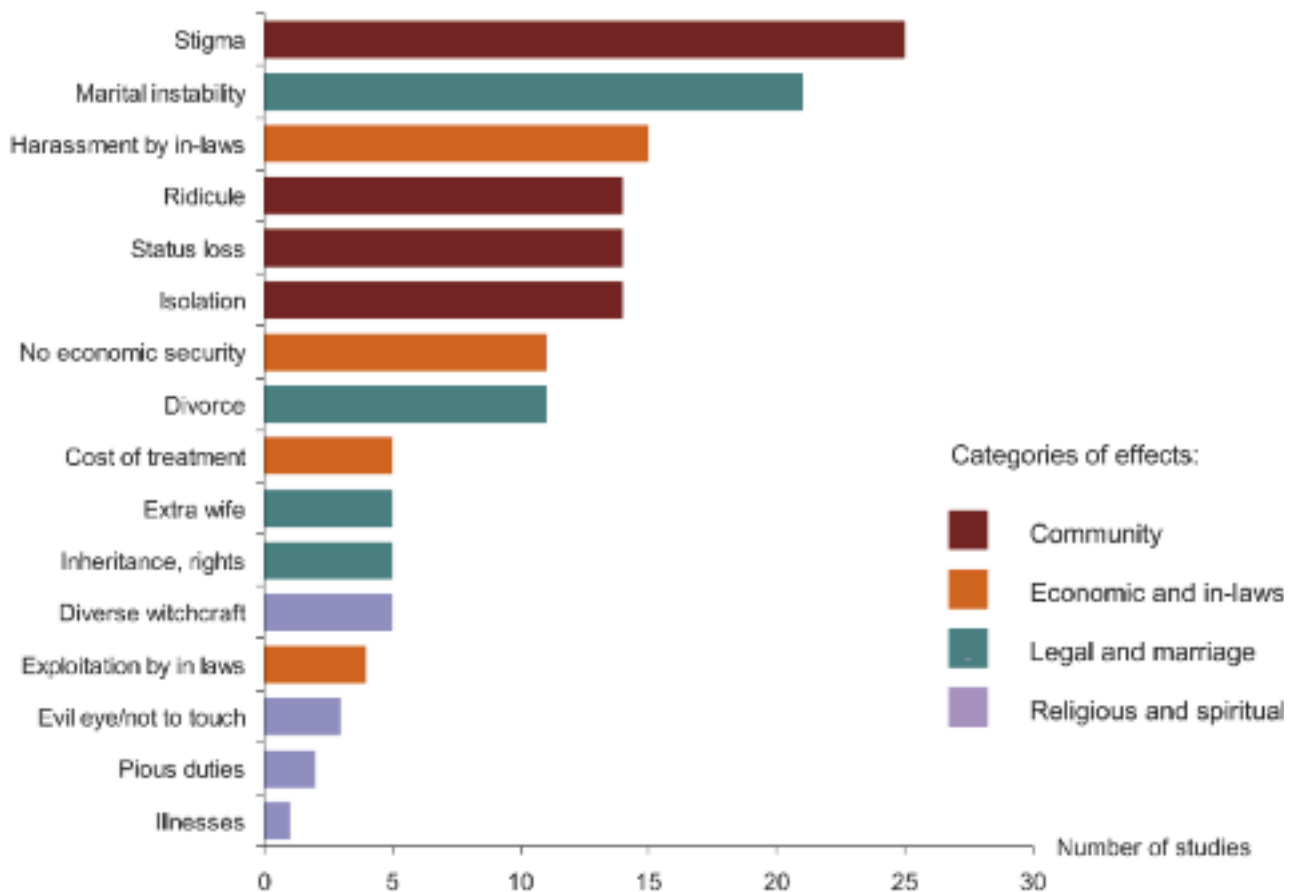


Fig. 1. — Number of studies in which diverse effects are mentioned

lished about Latin America or North Africa and the Near East. The majority of the studies in sub-Saharan Africa were carried out by Western anthropologists. It can be speculated that sub-Saharan Africa is still a very accessible area for Western anthropological research, and this is helpful in publishing in international (English-language) journals. The studies performed in the Indian subcontinent were mostly undertaken by scientists indigenous to the area. In the Indian subcontinent, in contrast to many other areas, English is both still an official language and language that scientists use to communicate, which is an advantage as regards getting papers published in international journals. These factors may be partly responsible for the relatively large body of papers concerning the two areas that are published in international journals.

Regarding the few papers published about areas in North Africa and the Near East, one can speculate that the rather prominent separation between the world of men and that of women in many Arabian and Islamic areas might hamper research in this field, especially because of the difficulties in getting access to women in the home. Regarding the few studies carried out in Latin America, social consequences of childlessness might be less intense,

because of the same cultural and economic forces that might explain the lack of serious social consequences in Western societies. Some cultural researchers state that Latin America has much in common with Western Europe and could possibly be considered a sub-civilization within Western civilization (Huntington, 1997) or is closely linked to Western culture and especially to that of Catholic Europe (Inglehart 1997).

The most frequently mentioned serious consequences of being childless are in the realm of community effects, in-law effects and effects on marriage. These severe effects concern almost exclusively women. This might be partly caused by still prevailing ideas that infertility is a woman's 'fault' or the denial of the existence of male infertility. It is remarkable that the most severe community effect, namely isolation and exclusion, is mentioned in ten reports. This situation creates an extremely difficult life for childless women, especially in communities in which people are well known to each other. But also stigma or being marginalized (mentioned in 24 reports), makes life very difficult in a village or quarter in which community life is the centre of most human interactions. The reactions of in-laws, and especially the mother in-law, also make childlessness

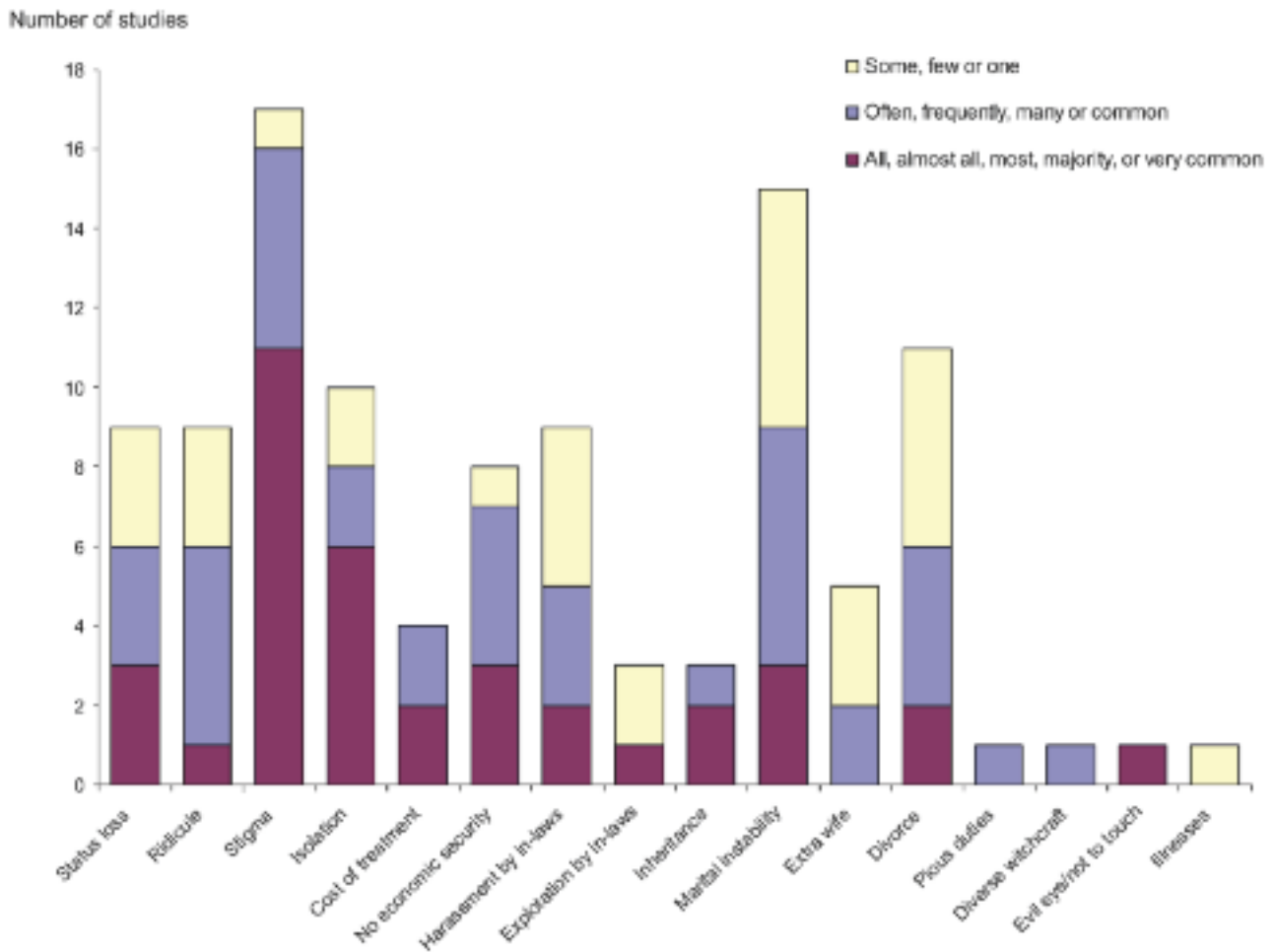


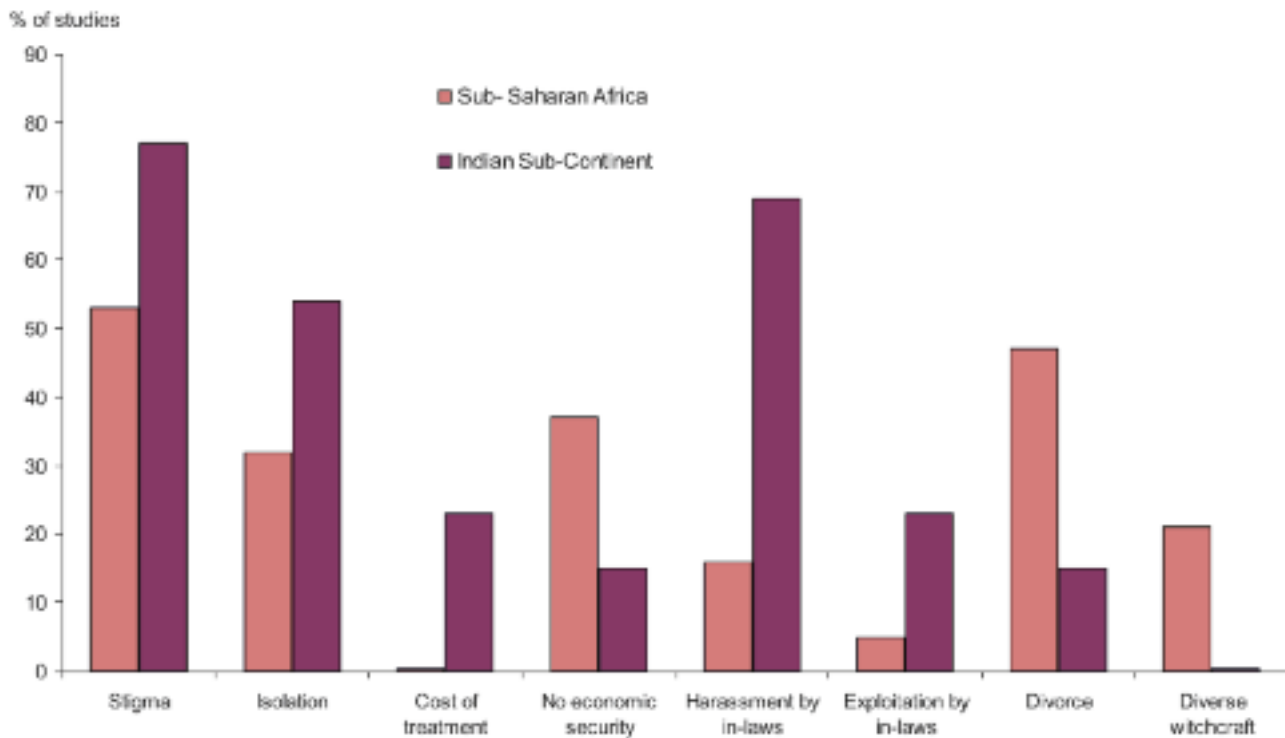
Fig. 2. — Frequency of effect if mentioned in studies

difficult to bear: harassment and rejection by in-laws is reported in 14 studies, while exploitation of the childless woman by the in-laws (husbands' family) is reported four times. In addition and often also influenced by in-laws, childlessness may lead to marital instability as described in 20 reports. Five reports state that husbands have actually taken another wife, and 11 state that husbands have divorced their childless wives. These effects on marriage are not so different from those reported by a recent study among elderly involuntary childless women done in the West (Wirtberg *et al.*, 2007). However, positive marriage effects have regularly been reported in studies in Western countries on couples in treatment or during reproductive life (Van Keep *et al.*, 1973; Callan, 1987; Baram *et al.*, 1988; Schmidt *et al.*, 2005). These effects are supposed to be associated with the shared experience of husband and wife of having to adapt to infertility and treatment. In contrast to marriage effects, accusations of witchcraft, including having the evil eye or being responsible for illness, are not mentioned very often (six studies) but this

may indicate that community members try to avoid and exclude childless women as much as possible.

In studies carried out in the Indian subcontinent, community effects and especially in-law effects are reported more often than in studies performed in sub-Saharan Africa. This might be explained by the possibly greater importance of in-laws in the lives of married women and their nuclear families, in the areas where the studies have been carried out. Actual divorce is mentioned more in the sub-Saharan studies. Here, a role may be played by local customs related to marriage and divorce that makes dissolution of the marriage easier and more common. However, in describing these differences it is necessary to remark that there are of course large differences in cultural and economic circumstances within both these parts of the world, and this makes overall conclusions very preliminary and rather imprecise. This applies especially to the comparison between sub-Saharan Africa and the Indian subcontinent.

A considerable number of the studies were limited in focus and did not take into consideration all



*Fig. 3.* — Comparison of Sub-Saharan Africa and Indian Sub-Continent: Percentages of studies in which effect is mentioned (effects with a differences of 20% and more are mentioned).

discerned types of social effects, thus effects might be unreported or under-reported. Some of the studies included research among childless persons as well as among women and men who already had a child. Assuming that the effects of not having a child at all are greater than the effects of not being able to have another child, there might be also under-reporting on severity of effects. Furthermore there are some considerable uncertainties in the reports that make the results difficult to interpret. Some of the studies did not report very well on the numbers of respondents or the frequency of effects. Social effects were sometimes described without revealing the sources of this knowledge. In other cases, in which different methods for information gathering were used, it is not always clear on which source the various results were based. In addition, about half of the studies were based on samples of women or couples who were looking for treatment or were having treatment, and thus those who did not visit hospitals, clinics or other health-care centres were not included. According to the study by Boivin and colleagues (2007), this number might be about half of the infertile populations in the areas concerned.

Most studies were qualitative, used small samples and were very local. Although qualitative research is very useful in exploring new areas and new issues, quantitative studies could help to corroborate the find-

ings. Moreover, it would allow for statistical analysis, in particular it would be possible to analyse the relationships between the social effects of childlessness and the socio-economic and cultural variables.

Of course, whether or not one has a child is not the only factor that influences one's status and one's well-being; for instance, Donkor and Sandall (2007) showed that infertile women in Southern Ghana with a relatively high status in the community that is derived from other factors (e.g. education), were less stigmatized than other infertile women. Nahar (2007) also described that childless women from poor rural families suffered much more than childless women from the urban middle class in Dacca. Also, Riessman (2000b) described a lesser frequency of insults and ridicule among economically privileged childless women than among poor childless women in rural Kerala.

In contrast to most Western studies on childlessness and infertility few studies in poor resource areas have focused on psychological effects. It might be expected that the often intense social consequences described above may exacerbate the psychological consequences (e.g. stress, anxiety, depression and health complaints) much more than in the West. Indeed, a study by Dyer (2005) into the psychological distress of infertile women in a local community of Cape Town showed that women who reported

intense social effects (i.e. physical abuse perpetrated by their husbands) suffered considerably more stress than infertile women in non-abusive relationships.

Finally, it can be asked whether economic and social development will ameliorate the often immensely serious consequences of being childless. In the rich Western countries, these social effects are seldom found. It is possible that some of the economic consequences regarding for example, care in old age and lack of economic security will diminish as economies develop further. Couples will be much less dependent on their children for their income. In Western countries, on a lifetime basis children cost more than they deliver. Economists have calculated that in the West a woman who has children will earn about EUR 100,000 less than a woman who does not have children (Mertens *et al.*, 1995; Pott-Butter, 1997). The Dutch 'household budget' institute recently stated that one child costs about 17% of the mean annual family income, and two children about 26% (Nibud, 2009). Across the Atlantic, the US Department of Agriculture stated in an Internet release that to raise a child to the age of 17 costs USD 150,000-300,000, depending on the family's social class (USDA News Release 0023.09). It might be argued that also in developing areas the balance between earnings and costs of having children is changing, because in the last decades the mean number of children per couple in many developing areas has decreased dramatically, especially in Asia, North Africa and the Near East (Population Studies, website 2009). Associated with this it appears that the nuclear family is becoming more and more the ideal family form (Pashigian, 2002; Nahar 2008), which may result in less influence from in-laws, and consequently less harassment by them. Improvements and developments in schooling that lead to more knowledge and information about the causes of infertility may mitigate the negative views of people in the community towards people who do not succeed in having a child and especially towards the end of blaming women for infertility. In this respect, active resilience among some of the childless women as described by Riessman (2000b) and by Nahar (2007) may help to diminish discriminatory behaviour. However, in many areas of the world there is still a pronatalist culture in which, besides the marginalization of involuntarily childless couples, the phenomenon of being voluntarily childless or postponing of having children is not well received (Feldman-Savelsberger, 2002; van Balen and Inhorn, 2002; Kagitbasi and Ataca, 2005). The social acceptance of couples who do not want to have children may be a sign of the disappearance of the stigmatization of being childless. Childless couples will probably continue to suffer negative social consequences as long as under the prevailing cultural

forces they are considered less worthy than other couples.

## References

- Apte H, Mali L, Navle M, Revle S. Womanhood first: sex workers and infertility in Pune city. *J Reprod Infant Psychol.* 2004;22:271-8.
- Baram D, Tourtelot E, Maecher E, Ko-Fen H. Psychosocial adjustment following unsuccessful in vitro fertilization. *J Psychosom Obst Gyn.* 1988;9:191-198.
- Bharadwaj A. Infertility and gender: a perspective from India. In: Van Balen F, Gerrits T and Inhorn M (eds). *Social science research on childlessness in a global perspective.* University of Amsterdam, Amsterdam, the Netherlands 2000, 65-74.
- Bhatti LI, Fikree FF, Khan A. The quest of infertile women in squatter settlements of Karachi, Pakistan: a qualitative study. *Soc Sci Med.* 1999;49:637-49.
- Boivin J, Bunting L, Collins JA, Nygren KG. International estimates of infertility prevalence and treatment-seeking: potential need and demand for infertility medical care. *Hum Reprod.* 2007;22:1506-12.
- Boonmongkon. Living through infertility: from loss to resolution of the life course of Thai women. In: Van Balen F, Gerrits T and Inhorn M. (eds). *Social science research on childlessness in a global perspective.* University of Amsterdam, Amsterdam, the Netherlands 2000, 28-34.
- Bos HMW, Van Balen F, Visser A. Social and cultural factors in infertility and childlessness. *Patient Educ Counsel.* 2006;59: 223-225.
- Brkovich AM, Fisher WA. Psychological distress and infertility: Forty years of research. *J Psychosom Obst Gyn.* 1998;19: 218-28.
- Callan VJ. The personal and marital adjustment of mothers and voluntary and involuntary childless wives. *J Marr Fam.* 1987;49:847-856.
- Chapman E, Smith JA. Interpretative phenomenological analysis and new genes. *J Health Psychol.* 2002;7:125-30.
- Denga DI. Childlessness and marital adjustment in Northern Nigeria. *J Marriage Family.* 1982;44:799-802.
- Dyer SJ. Infertility in South Africa: women's reproductive health knowledge and treatment-seeking behavior for involuntary childlessness. *Hum Reprod.* 2002;17:1657-62.
- Dyer SJ, Abrahams N, Hoffman M, Van der Spuy ZM. Men leave me as I cannot have children": women's experiences with involuntary childlessness. *Hum Reprod.* 2002;17:1663-8.
- Dyer SJ, Abrahams N, Mokoena NE, Van der Spuy ZM. You are a man because you have children": experience, reproductive health knowledge and treatment-seeking behaviour among men suffering from couple infertility in South Africa. *Hum Reprod.* 2004;19:960-7.
- Dyer SJ, Abrahams N, Mokoena NE, Lombard CJL, Van der Spuy ZM. Psychological distress among women suffering from couple infertility in South Africa: a quantitative assessment. *Hum Reprod.* 2005;20:1938-43.
- Donkor ES, Sandall J. The impact of perceived stigma and mediating social factors on infertility-related stress among women seeking infertility treatment in Southern Ghana. *Soc Sci Med.* 2007;65:1683-94.
- Feldman-Savelsberg P. Is infertility an unrecognized public health and population problem? The view from the Cameroon Grassfields. In: Inhorn MC and Van Balen F (ed). *Infertility around the globe. New thinking on childlessness, gender, and reproductive technologies.* UCLA-press, Berkeley, LA, USA 2002, 215-32.
- Fido M, Zahid MA. Coping with infertility among Kuwaiti women: cultural perspectives. *International J Soc Psychiatry.* 2004;50:294-300.
- Gerrits T. Social and cultural aspects of infertility in Mozambique. *Patient Educ Counsel.* 1997;31:39-48.

- Gerrits T (2002) Infertility and matrilineality: the exceptional case of the Macua of Mozambique. In: Inhorn MC and Van Balen F (ed). *Infertility around the globe. New thinking on childlessness, gender, and reproductive technologies.* UCLA-press, Berkeley, LA, USA 2002, 222-46.
- Gijssels M, Mgalla Z, Wambura L. No child to send: context and consequences of female infertility in northwestern Tanzania. In: Boerma JT and Mgalla Z (eds). *Women and infertility in sub-Saharan Africa: a multi-disciplinary perspective.* Royal Tropical Institute, Amsterdam, the Netherlands 2001, 203-22.
- Greil AL. Not yet pregnant, infertile couples in contemporary America. Rutgers University Press, New Brunswick, USA 1991.
- Greil AL. Infertility and psychological distress: A critical review of the literature. *Soc Sci Med.* 1997;11:1506-12.
- Handwerker L. The politics of making modern babies in China: reproductive technologies and the new eugenics. In: Inhorn MC and Van Balen F (eds). *Infertility around the globe, new thinking on childlessness, gender and reproductive technologies.* UCLA-press, Berkeley, Los Angeles, USA 2002, 298-314.
- Hollos M. Profiles of infertility in Southern Nigeria: women's voices from Amakiri. *Afr J Reprod Health.* 2003;7:46-56.
- Hollos M, Larsen U. Motherhood in sub-Saharan Africa: the social consequences of infertility in an urban population in northern Tanzania. *Cult Health Sex.* 2008;10:159-73.
- Hörbst V. Male infertility in Mali, kinship and impacts on biomedical practice in Bamako. In: Brockopp J and Eich T (eds). *Muslim ethics; theory and practice.* South Caroline University Press, South Caroline, USA 2008, 118-37.
- Huntington SP. *The clash of civilizations and the remaking of the world order.* Simon and Schuster, New York, USA 1997.
- ICPD. *ICPD Plan of Action.* UNICPD secretariat, New York, USA 1994.
- Inglehart R. *Modernization and postmodernization.* Princeton University Press, Princeton, USA 1997.
- Inhorn MC. *Quest for conception, gender, infertility and Egyptian medical traditions.* University of Pennsylvania Press, Philadelphia, USA 1994.
- Jenkins GL. Childlessness, adoption, and Milagros de Dios in Costa Rica. In: Inhorn MC and Van Balen F (eds). *Infertility around the globe, new thinking on childlessness, gender and reproductive technologies.* UCLA-press, Berkeley, Los Angeles, USA 2002, 171-90.
- Johnson JW. *In home care for frail childless adults: getting by with a little help from their friends?* Urban Institute, Washington, USA 2006.
- Kagitcibasi C, Ataca B. Value of children and family change : a three-decade portrait from Turkey. *Appl Psychol Int Rev.* 2005;54:317-37.
- Kielman K. Barren ground: contesting identities of infertile women in Pemba, Tanzania. In: Lock M and Kaufert PA (eds). *Pragmatic women and body politics.* Cambridge University Press, Cambridge, UK 1998, 127-63.
- Koster-Oyekan W. Infertility among Yoruba women: perceptions on causes, treatments and consequences. *Afr J Reprod Health.* 1999;3:13-26.
- Leonard L. Problematizing fertility: "scientific" accounts of Chadian women's narratives. In: Inhorn MC and Van Balen F (eds). *Infertility around the globe, new thinking on childlessness, gender and reproductive technologies.* UCLA-press, Berkeley, Los Angeles, USA 2002, 215-32.
- Mariano E. Conceptions about woman's childlessness and land's infertility in a Rhonga community in the South of Mozambique. In: Van Balen F, Gerrits T and Inhorn M (eds). *Social science research on childlessness in a global perspective.* University of Amsterdam, Amsterdam, the Netherlands 2000, 136-39.
- Mariano E. Involuntary childlessness among the Shangana (Mozambique). *J Reprod Infant Psychol.* 2004;22:261-70.
- Meera Guntupalli A, Chenchugudem P. Perceptions, causes and consequences of infertility among the Chenchu tribe of India. *J Reprod Infant Psychol.* 2004;22:249-60.
- Mertens N, Schippers J, Siegers J. Career interruptions and women's life-time earnings. *Europ J Women's Stud.* 1995;2:469-91.
- Meyer B. Satan, slangen en geld: bekentenissen over duivelse rijkdom in christelijk Ghana (Satan, snakes and money: confessions about devilish richness in christian Ghana). In: Driessen H and De Jonge H (eds). *In de ban van betekenis, proeven van symbolische antropologie (Under the spell of meaning, essays of symbolic anthropology).* SUN, Nijmegen, the Netherlands 1994, 170-97.
- Mulgaonkar V. Treatment seeking behaviour of childless couples in the slums of Mumbai. In: Van Balen F, Gerrits T and Inhorn M (eds). *Social science research on childlessness in a global perspective.* University of Amsterdam, Amsterdam, the Netherlands 2000a, 95-101.
- Mulgaonkar V. A research and an intervention programma on women's reproductive health in slums of Mumbai. *Sujeevan Trust, Mumbai, India 2000b.*
- Nahar P, Sharma A, Sabin K, Begum L, Ahsan SK, Baqui AH. Living with infertility: experiences among urban slum populations in Bangladesh. *Reprod Health Matters,* 2000;8: 33-44.
- Nahar P. *Childlessness in Bangladesh, suffering and resilience among rural and urban women.* University of Amsterdam, Amsterdam, the Netherlands 2007.
- Neff DL. The social construction of infertility: The case of the matrilineal Nayars in South India. *Soc Sci Med.* 1994;39: 475-85.
- Nene UA, Covaji K, Apte H. Infertility: a label of choice in the case of sexual dysfunctional couples. *Patient Educ Counsel,* 2005;59:234-8.
- NIBUD Nationaal Instituut voor Budgetvoorlichting. Hoeveel kost uw kind? (How much costs your child). Downloaded <http://www.nibud.nl/uitgaven/kinderen/kosten-van-kinderen.html> at 3-6-2009.
- Okonofua F, Harris D, Odebiyi A, Kane T, Snow RC. The social meaning of infertility in Southwest Nigeria. *Health Transition Rev.* 1997;7:205-20.
- Pashgian MJ. Infertility and the politics of marriage in Northern Vietnam. In: Van Balen F, Gerrits T and Inhorn M (eds). *Social science research on childlessness in a global perspective.* University of Amsterdam, Amsterdam, the Netherlands 2000, 127-8.
- Pashgian MJ. Conceiving the happy family, infertility and marital politics in Northern Vietnam. In: Inhorn MC and Van Balen F (eds). *Infertility around the globe, new thinking on childlessness, gender and reproductive technologies.* UCLA-press, Berkeley, Los Angeles, USA 2002, 134-51.
- Pearce TO. She will not be listened to in public. Perceptions among the Yoruba of infertility and childlessness in women. *Reprod Health Matters.* 1999;13:69-79.
- Pott-Butter. *Uitgesteld ouderschap: wiens keus, wiens kosten (Late parenthood, choices and costs).* In: Beets G, Bouwens A and Schippers J (eds) *Uitgesteld ouderschap (Late parenthood).* Thesis, Amsterdam, the Netherlands 1997.
- Riessman C. Positioning gender identity in narratives of infertility: South Indian women's lives in context. In: Van Balen F, Gerrits T and Inhorn M (eds). *Social science research on childlessness in a global perspective.* University of Amsterdam, Amsterdam, the Netherlands 2000a, 35-43.
- Riessman C. Stigma and everyday resistance practices, childless women in South India. *Gender Society,* 2000b;14:111-35.
- Riessman CK. Positioning gender identity in narratives of infertility: South Indian women's lives in context. In: Inhorn MC and Van Balen F (eds). *Infertility around the globe, new thinking on childlessness, gender and reproductive technologies.* UCLA-press, Berkeley, Los Angeles, USA 2002, 152-70.



- Schmidt L, Holstein B, Christensen U, Boivin J. Does infertility cause marital benefit? An epidemiological study of 2250 women and men in fertility treatment. *Patient Educ Counsel.* 2005;59:244-251.
- Schmidt L. Social and psychological consequences of infertility and assisted reproduction – what are the research priorities? *Hum Fert.* 2009;12:14-20.
- Smith JA, Osborn M. Interpretative phenomenological analysis. British Psychological Society, Leicester, England 2004.
- Sundby J. Infertility in the Gambia: traditional and modern health care. *Patient Educ Couns.* 1997;31:29-37.
- Sundby J, Mboge R, Sonko S. Infertility in the Gambia: frequency and health care seeking. *Soc Sci Med.* 1998;46:891-9.
- Unisa S. Childlessness in Andhra Pradesh, India: treatment-seeking and consequences. *Reprod Health Matters.* 1999;7:54-64.
- Upton RL. 'Infertility makes you invisible': gender, health and the negotiation of fertility in Northern Botswana. *J South Afr Stud.* 2001;27:349-62.
- USDA United States Department of Agriculture. News release no. 0023.09. Downloaded from <http://www.usda.gov/wps/portal/usdahome> on 10-06-2009.
- Van Balen F. Een leven zonder kinderen, ongewilde kinderloosheid: beleving, stress en aanpassing. (A life without children, involuntary childlessness: experience, stress and adaptation). Dekker & van de Vegt, Assen, the Netherlands 1991.
- Van Balen F, Trimbos-Kemper T, Verdurmen J. Perception of diagnosis and openness of patients about infertility. *Patient Educ Counsel.* 1996;28:247-52.
- Van Balen F, Inhorn MC. Interpreting infertility a view from the social sciences. In: Inhorn MC and Van Balen F (eds). *Infertility around the globe, new thinking on childlessness, gender and reproductive technologies.* UCLA-press, Berkeley, Los Angeles, USA 2002, 3-32.
- Van Keep PA. The involuntary sterile couple. World Health Foundation, Geneva, Switzerland 1973.
- Wenger GC, Dykstra PA, Melkas T, Knipscheer KCPM. Social embeddedness and late-life parenthood, community activity, close ties and support networks. *J Fam Issues.* 2009;28:1419-56.
- Widge A. Seeking conception: experiences of urban Indian women with in vitro fertilization. *Patient Educ Counsel.* 2005;59:226-33.
- Wiersema NJ, Drukker AJ, Tien Dung MB, Hyunh Nu G, Than Nhu N, Lambalk CB. Consequences of infertility in developing countries: results of a questionnaire and interview survey in the South of Vietnam. *J Translational Med.* 2006;4:54-62.
- Wirtberg I, Moller A, Hogstrom L, Tronstad S-E, Lalos A. Life 20 years after unsuccessful infertility treatment. *Hum Reprod.* 2007;22:598-604.