Objects of temporary contraception: an exploratory study of women's perspectives in Karachi, Pakistan

Journal:	*BMJ Open*
Manuscript ID:	bmjopen-2013-003279
Article Type:	Research
Date Submitted by the Author:	22-May-2013
Complete List of Authors:	Marvi, Kamyla; Institute of International Education, Karachi, Leadership Development for Mobilising Reproductive Health (LDM) Howard, Natasha; London School of Hygiene & Trop Med, Global Health and Development
Primary Subject Heading:	Qualitative research
Secondary Subject Heading:	Sexual health
Keywords:	QUALITATIVE RESEARCH, PUBLIC HEALTH, REPRODUCTIVE MEDICINE

SCHOLARONE™
Manuscripts

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

OBJECTS OF TEMPORARY CONTRACEPTION: AN EXPLORATORY STUDY OF WOMEN'S PERSPECTIVES IN KARACHI, PAKISTAN

Kamyla Marvi[1] and Natasha Howard[2]

[1] Leadership Development for Mobilising Reproductive Health (LDM), Institute of International Education, Karachi, Pakistan; kamyla.marvi@gmail.com

[2] Department of Global Health and Development, London School of Hygiene and Tropical Medicine (LSHTM), London, UK

Correspondence to

Natasha Howard, Department of Global Health and Development, Faculty of Public Health and Policy, LSHTM, 15-17 Tavistock Place, London, WC1H 9SH; T: +44 (0)2079272144; F: +44 (0)207436 5389; E: natasha.howard@lshtm.ac.uk

Key words

Family planning, qualitative research, traditional medicine, Pakistan

Word count: 3,824

For peer review only

ABSTRACT

Objective

To explore perspectives of three modern contraceptive objects, using an *emic* approach, among women in Shah Faisal Colony, a low-income community in Karachi, Pakistan.

Methods

In-depth face-to-face interviews of non-users (n=5), injection users (n=7), pill users (n=4), and IUD users (n=4) were conducted in 2011. Qualitative content analysis with an inductive approach and manual thematic coding was used to analyse data.

Results

Awareness of family planning was high. Women described different therapeutic approaches, stating they generally preferred modern medicine for contraception as it was fastest and most powerful. They reported that fear of some contraceptive objects, particularly injections and IUDs, influenced their choices. Women explained their perceptions of how the heating effects of contraceptives could cause unwanted side-effects including menstrual irregularities, weight gain, and weakness, leading to disease.

Conclusions

Most women wanted family planning, but remained dissatisfied with available contraceptives and their effects. While women reported that they relied on modern medicine for contraception, their descriptions of how contraceptives affected their health relied on the hot-cold explanatory idiom of traditional medicine.

Article focus

- To explore women's understanding and interpretations of three modern contraceptives.

Key messages

- Women were knowledgeable about family planning and relied on modern contraceptives.
- Contraceptive potency and effects were interpreted using the hot-cold idiom of traditional medicine.
- Consideration of women's interpretive idioms could help providers improve health messages and family planning counselling.

Study strengths and limitations

- Use of qualitative methods provided rich insight into women's interpretations and decision-making regarding contraceptives.
- Available time and funding constrained the sample size, limiting inclusion of a potentially broader range of perspectives.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

INTRODUCTION

Pakistan, the world's sixth most populous country, has an estimated population of 176 million.[1 2] Annual population growth of 2.1% resulted in the population quadrupling in the past fifty years with 41% below age fifteen.[1 3] Potential reasons are both demand-side (e.g. female autonomy, religious beliefs, son preference [4-7]) and supply-side (e.g. cost, poor distribution, and limited coverage of contraceptives [8-10]). A rise in political and religious extremism since the dictatorship of Zia ul Haq (1977-88), Pakistan's subsequent involvement in the international 'war on terror,' and inadequate governance (e.g. corruption, weak infrastructure, violence) have weakened the economy, worsening social indicators. High population growth strains Pakistan's limited resources, affecting health indicators. For example, with reproductive-age women constituting almost one-quarter of Pakistan's total population, a low contraceptive prevalence rate (CPR) of 29.6%, with much lower rates among poor and rural populations, contributes to a high maternal mortality ratio of 260/100,000 - mostly preventable haemorrhage, eclampsia, and sepsis.[1 5 11 12]

Pakistan has had a population programme since the 1960s and family planning awareness is nearly universal, with 96% of women surveyed identifying at least one modern contraceptive method.[1 13] While modern contraceptives comprise 73% of Pakistan's CPR, temporary methods allowing birth spacing (e.g. pills, IUDs, injectables, implants, condoms) comprise 13.6% of current usage, of which half (6.8%) are condoms.[1] Thus, only a small proportion of Pakistani couples use temporary methods with evidence suggesting a significant unmet need for contraception (Table 1).[1 14 15]

Table 1 Method usage among married women aged 15-49 in Pakistan

Method	Description	Application	Usage	Ever used
Hormonal pill	A birth control method including a combination of oestrogen and progestogen.	Taken by mouth daily	2.1%	12.2%
Injectable contraceptive (e.g. 1, 2, 3-month doses)	Hormones, which stop women ovulating, thicken cervical mucus (making it difficult for sperm to get through) and thin the lining of the womb (making it difficult for ova to attach to the lining).	Injected into a muscle (e.g. buttock)	2.3%	11.1%
Intra-uterine contraceptive device (IUD)	The copper IUD (more common in Pakistan) works by negatively affecting sperm mobility and preventing their joining with an egg. Additionally, the foreign body inside the uterus irritates the lining and wall making it hard for an embryo to implant.	Inserted into uterus	2.3%	8%

Source: [1]

Pakistan is a predominantly Muslim society with formal, informal, and popular healthcare approaches coexisting. Pakistan's formal medical system includes modern (i.e. Western) medicine, westernised homeopathy, and traditional *hikmat*. *Hikmat* or *unani tibb* is traditional Greco-Arab medicine, widely practiced in Pakistan, with similarities to Indian *Ayurvedic* medicine. Modern medicine is the most common approach in urban settings and government facilities, but overlaps with traditional and folk approaches.[16 17] Shaikh and colleagues found health providers often presented false qualifications or interpreted modern medicine to suit patient beliefs.[16] While contraceptives are modern medicine, popular perceptions and

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

practices are influenced by religion and other therapeutic approaches.[11 17] Nichter noted that multiple therapy systems coexist in most countries, despite the regulatory efforts of government or vested interests of dominant therapy systems.[18] Kleinman classified the professional, traditional, and popular as three overlapping systems, while Nichter found providers underappreciated the ways popular ideas about medicine influenced healthcare seeking and compliance.[18-20]

Women's perceptions of contraceptives significantly influence their decisions to start or continue family planning in Pakistan, supporting recent global discourse on influences of side-effects on usage.[21-25] Bhatti and colleagues found 12.1% of non-users cited method-related reasons, including fear of side-effects and interference with normal bodily processes.[1 26] Sultana and colleagues found a 29% discontinuation rate for female methods in Punjab was primarily due to side-effects, as contraceptive users associated all subsequent health problems (e.g. obesity, body aches, high blood pressure, nausea, irregular bleeding, infertility) with contraceptive usage.[23]

Most studies approach contraceptive behaviour from medical or behavioural perspectives, with minimal consideration of the contraceptive objects used.[27] Such approaches can result in women's perspectives being minimised as misconceptions.[28 29] Little research has explored the explanatory models Pakistani women apply to their contraceptive beliefs.[28] The term 'misconception' already implies these beliefs are flawed, and that the alternative medical model provides the correct explanation. However, these beliefs are entrenched in age-old belief systems and experiences that are real and personal to women and those around them. Nishtar found these beliefs to be based on societal perceptions, which women considered must have some basis in truth to be so widespread.[28] Multiple sources of perception create the basis on which each woman makes decisions.[30] The objects used for temporary contraception have their own potency to affect the body's functioning, perceptions of which influence usage decisions (e.g. whether, which, how long?). Little *emic* data, showing behaviour or beliefs in culturally meaningful terms, connects popular perceptions of contraception to usage.[31 32]

This study examined perceptions of modern contraceptive objects, using an *emic* perspective, among women in a low-income community of Karachi, Pakistan.[33] The research question was 'What are these women's beliefs about contraceptive objects and do those beliefs affect usage decisions?' It contributes to the literature on unmet need by describing how popular perceptions affect usage. Study objectives were to:

- describe women's perceptions of three temporary contraceptives as objects (i.e. injections, pills, IUDs);
- consider how women's perceptions of contraceptive usage and potency within their own therapeutic paradigms affected usage decisions.

METHODS

Ethics approval was granted by the LSHTM research ethics committee in the United Kingdom and the Institutional Review Board of Interactive Research and Development in Pakistan.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

With approximately 18 million inhabitants, Karachi is the commercial, industrial and financial hub of Pakistan (Figure 1).[34] Shah Faisal Colony (Figure 2), with a population of over 335,000, has experienced violent civil clashes. It was chosen for its ethnic diversity and low socioeconomic level. A local non-governmental organisation, Rana Liaquat Craftsman Colony (RLCC), provided a community entry point, facilitating access with women. RLCC has provided basic clinic services in Shah Faisal Colony since 1954, providing services to approximately 5,400 families.

In-depth face-to-face interviews were chosen to explore women's experiences and perceptions. Twenty participants were purposively sampled, for diversity of opinion, from non-menopausal married women over age 20, living in Shah Faisal Colony, Karachi, aiming for:

- 5 non-users of contraception;
- 5 injectable contraceptive users (1, 2 or 3-month dosage);
- 5 oral pill users;
- 5 IUD users.

Participants were recruited by RLCC outreach workers, trained for one day in qualitative recruitment methods, who distributed study information sheets and obtained written informed consent from all potential participants. The lead author was responsible for final participant selection and conducting interviews in a private room at the RLCC health centre. Two pilot interviews were conducted to finalise the interview guide. The guide ensured themes of interest were covered, though interviews were conducted as loosely guided conversations to allow women control in defining topics. Interviews were digitally recorded with participant permission and took approximately one hour. Recordings were given a pseudonym to ensure confidentiality, which was also recorded on the consent form and kept in a locked file. Observations were recorded for each interview.

Interviews were transcribed in Urdu, translated into English, and typed into Microsoft Word by a professional transcriptionist and translator familiar with reproductive health terminology. Translations were checked by the interviewer, and participants where possible, to ensure accuracy. Transcripts were labelled by pseudonym and numbered by page and line.

Following principles of interpretive social research, the interviewer conducted initial analysis to increase interpretability and deepen understanding of social and emotional context.[35] Qualitative content analysis with manual thematic coding was used, with an inductive approach to building non-hierarchical themes and identifying meaning.[36] Consensus was reached between authors on differences found. Data was triangulated by comparing responses to similar questions in different transcript sections.

FINDINGS

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

Twenty-one interviews were conducted. One, unrecorded, was excluded. Of 20 participants (Table 2), six were illiterate and others educated to secondary level, with two completing matriculation after grade 10 and five completing intermediate certification after grade 12. Most (i.e. 13 women) were housewives, three did piecework embroidery at home, and a few had outside jobs (e.g. domestic work, teaching, one actress). Half of husbands (i.e. 11) worked in low-income jobs (e.g. street merchants), six were semi-skilled or skilled labourers (e.g. electrician, driver, barber), while two husbands were unemployed. Women were of various ethnicities, including three Pathans, five Muhajir, and seven Punjabis. All were Muslim and most had resided in the area since childhood or marriage. Participants averaged 31 years old (25-45 years), were married and still menstruating. Non-users were on average 10 years older than contraceptive users (38 versus 28). All had children, ranging from seven months to 25 years old. Participants had an average of three children each (range 1-10). Non-users had fewer male children on average, at 0.80 male and 2.6 female versus 1.5 male and 1.6 female for contraceptive users. Of the fifteen contraceptive users, seven used injectable contraceptives, four used contraceptive pills, and four used an IUD. Thirteen contraceptive users cited the expense of raising children as their primary reason for birth spacing, while two cited previous pregnancy complications.

Table 2 Participant demographics, ordered by contraceptive usage and age

Pseudonym	Usage	Age	Education	Origin	Children	
					M	F
Ayesha	Non User		Grade 9	Haripur	2	1
Nadira	Non User	31	Intermediate	Pindi	0	2
Kaukab	Non User (pregnant)	37	Grade 5	Abbasi	0	4
Rashida	Non User	40	Grade 9	-	0	5
Aziza	Non User	45	Matriculation	Muhajir	2	1
Karima	Injection	25	Grade 8	Punjabi	1	0
Sofia	Injection	25-26	Grade 8	-	1	2
Farida Bibi	Injection	28	Intermediate	-	1	0
Rehmat	Injection	28	Intermediate	Muhajir	2	0
Talat	Injection	28	Illiterate	Punjabi	0	4
Gul Zehra	Injection	33	Illiterate	Pathan	2	8
Nasreen	Injection	35	Matriculation	Punjabi	2	1
Misbah	Pills		Illiterate	Pathan	1	1
Qamar	Pills	23	Grade 8	Punjabi	1	1
Pari	Pills	28	Illiterate	Punjabi	2	2
Insiya	Pills	28	Intermediate	-	2	1
Shazia	IUD		Illiterate	Punjabi	1	1
Mariam	IUD	<30	Illiterate	Pathan	1	2
Shaista	IUD	30	Intermediate	Muhajir	2	1
Shehnaz	IUD	31	Grade 8	Muhajir	3	1

NB: Education in Pakistan is organised into primary (grades 1-5); middle (grades 6-8); high (grades 9-10, culminating in matriculation); intermediate (grades 11-12, culminating in intermediate diploma).

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Emergent themes are organised under therapeutic systems, contraceptives as objects, and potency and side-effects.

Therapeutic systems

All women discussed multiple therapeutic systems, including doctors practicing through private and government services, lady health workers, traditional birth attendants, homeopaths, *hakeems*, and practitioners offering healing prayers.[16] Most women used home remedies and explored different systems with varying success:

Talat: "Yes we have tried all. We have had prayers done; we have taken medicines from doctors, and hakeems too. Some are good and effective."

Nadira: "For example, a complete treatment for jaundice does not exist in modern medicine, which simply advises to take more water and juices; but homeopathy has the treatment for this."

Women preferred the speed and power of modern treatments:

Talat: "Most of the time we take medicines from doctors [because] *we get relief more quickly. Children get better. Rather then taking remedies we more often take medicine from outside so that the children can be comfortable more quickly. They shouldn't suffer."*

Rehmat: "The difference is that the homeopathic impact is very late, and allopathic, such as injections etc., has an immediate effect... A person recovers immediately."

Farida Bibi: "Very few people go to a Hakeem; and those that do are elderly. I mean to say, those who, because of their age are unable to use the medicines of a doctor as they are of greater power, they go to a Hakeem."

Women used home remedies or modern services for reproductive issues. Most chose delivery in hospitals or maternity clinics, with only four reporting giving birth with the help of a *dai* or traditional birth attendant. Nineteen of twenty participants expressed eagerness to space their children. Non-users spoke of birth spacing through breast-feeding or other natural methods, with one woman using withdrawal. All women preferred modern contraceptives, and knew of no methods emerging from alternative therapy systems.

Contraceptives as objects

Women were shown injectable contraceptives, pills, and IUDs during interviews to elicit their perceptions.

All were familiar with injections as objects, as Pakistani practitioners commonly overprescribe them.[37] Women expressed different levels of fear, from mild to much stronger discomfort:

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

Rehmat: "The injection hurts so much that I get shaken up, although I try to control myself. She says to leave the body loose, but when an injection is going inside, how I can leave it loose? My leg becomes numb. She says 'I don't know - this doesn't happen with anyone else, just you...'"

Some women said injections were a more powerful and faster way of delivering medicine to the body.
Rehmat: "When we eat medicine, it affects after a while. Injections effect immediately, they mix with the blood quickly."

Most women said pills were easy to use, some suggesting they were mild or weak because they were small and needed to be taken daily.
Insiya: "These are so small. One doesn't even feel that one has taken something."

One woman explicitly related size to potency:
Ayesha: "Due to size they may have greater potency, the ones that are large-sized…"
Interviewer: "And this one that is small? (pointing to contraceptive pills)"
Ayesha: "It may be of lesser potency."

Women expressed greatest fear of IUDs. Vaginal insertion already brings a sense of discomfort within the cultural milieu of Muslim women. Many who commented were less familiar with IUDs, and several expressed hesitation about inserting a foreign object into the body.
Insiya: "When I went to get injected they showed me the IUD, that either I should use the injection or the IUD, but the mere sight of it appeared to be something dangerous"

Several worried it would hurt their husbands:
Shazia: "Yes, he experiences inconvenience. It is that wire-like thing, it sticks to him. He scolds me, 'Why did you get this done?' Later on he becomes normal. He says it is all right."

Several expressed concern about potential risks from IUD materials:
Misbah: "Plastic and flesh are different, it will do some harm."
Interviewer: "This is plastic, that's why it will cause problems?"
Misbah: "Yes, it's plastic. That's why it causes some problem or another."
Interviewer: "What problem?"
Misbah: "I don't know, but I don't find it good."

Shaista: "Now copper is kept inside the wet body and something keeps on releasing from it. This is what people say. People used to tell me that it is rust and when it rusts from inside it will produce fungus inside the uterus and obviously fungus will be converted into cancer and many people complain of cancer."

Potency and side-effects

Colour

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Most stated that an object's colour did not affect its potency but helped with identification. A few noted that lighter colours meant the medicine was gentler.

Shaista: "Obviously light colour medicines are more suitable and better, you might have seen that iron syrups are darker in colour and they have a different taste. When you drink it you will feel that you have eaten iron. It emits a smell like iron and does not suit us."

Heat

Nearly all discussed medicinal potency and effect on their wellbeing in terms of heating *(garam taseer)* and cooling *(thandi taseer)* properties. Participants considered modern medicine heat generating and other therapies less so.

Farida Bibi: "One hears that the medicines of the Hakeem are herbal and they are cooling. Even if these medicines do not bring relief, they do not cause harm."

All women identified contraceptives as 'heating,' with pills and injections particularly, considered more heating than other modern medicines:

Ayesha: "These things generate heat into one's body; one feels upset. If I take a tablet I feel uneasy and my heart pounds."

Interviewer: "What is its effect?"
Qamar: "It is hot…
Interviewer: "Are all tablets hot?"
Qamar: "Some are hotter than others."
Interviewer: "Do you think these [contraceptives] are hotter or cooler?"
Qamar: "Yes, these are hotter."

Women described the heating effect of contraceptives as resulting in, or further accentuating, irregular or excessive menstruation, weakness, and weight gain. Most said contraceptive heat resulted in excess bleeding:

Shehnaz: "I got it [IUD] *placed that's why I have more flow of menstruation; that happens with everyone."*

Several equally interpreted missed menstruation as heat damage, discussing herbal remedies to encourage the onset of delayed menstruation:

Nasreen: "Obviously, they [injections] *are heat-generating. They may be burning the blood."*
Interviewer: "What do you mean by burning the blood as you cannot see the process?"
Nasreen: "Just what elder women say; girls take injections; the blood gets burned; there is no menstruation."

Others focused on weakness and swelling.

Pari: "If a woman is weak she shouldn't take it. I know how difficult it is for me. She won't tolerate it well. She will be so tired from taking pills. They are very hot and because they are hot they will rot your blood. You will feel unwell."

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Nadira: "I was not like I am today. There is more swelling in my body. When one takes more medicines, I think it harms the body."
Interviewer: "You are saying that it is due to hot medicines?"
Nadira: "Yes it is due to heat."

Menstruation

A regular flow of menstruation was considered normal and healthy by all women. Women associated irregular bleeding with weakness, weight gain, and disease. Women associated menstrual irregularities with all three contraceptives, but those using injectables complained most:
Nasreen: "I stopped taking injections; I say that the flow of menstruation is also essential."

Most reported menstruation as a form of cleansing. If it did not occur regularly then weight gain or serious disease could follow:
Farida Bibi: "I too fear that my periods may stop and that my abdomen starts bulging."

Nasreen: "They say that if menstruation stops it causes internal diseases. Tumours are formed, obviously, if something dirty doesn't find its way out."

Women associated both excessive and insufficient menstruation with weakness. Perspectives varied as to whether weakness caused irregular bleeding or vice versa.
Farida Bibi: "Some have excessive menses; they have it twice a month; as a result of which one gets weaker. For example, in our home there is my elder sister-in-law; it [IUD] *did not suit her. She goes through excessive menstruation, even more than before. She is getting weaker day by day."*

Talat: "When it used to come every month it was ok. Now it is every 2-3 months. Then sometimes it is scanty and sometimes it is heavy."
Interviewer: "How does that affect a woman?"
Talat: "It causes weakness. When women menstruate, then weakness is relieved."

Long-term effects

Women's perspectives were mixed whether long-term or repeated usage of contraception was harmful. Some, who felt comfortable with their method of contraception, said that extended usage of five to ten years was harmless:
Ayesha: "What effect would it be? No, nothing..."
Interviewer: "Nothing?"
Ayesha: "It depends on you. You should take care of yourself."

Others were concerned about blood pressure, infertility, uterine damage, obesity, and 'problems with the blood'. The most common concern was temporary infertility:

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml
For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Talat: "You won't get pregnant. When the effect of medicine finishes in the body, then pregnancy occurs. My niece had the injection. When she left the injection, a year or so after, when the effect of the medicine finished, she conceived."

Nasreen: "If you use something in routine you should give a gap in between…"
Interviewer: "So if I desire child spacing of five years and if I use injections continuously?"
Nasreen: "No, don't do that!"
Interviewer: "What is the risk involved in that?"
Nasreen: "The risk is that the menstruation will stop altogether."
Interviewer: "So is that risky?"
Nasreen: "Yes, that is dangerous!"

One participant stated that prolonged usage of medicines reduces efficacy:
Rashida: "Anything stops having an effect. If you continuously use a medicine its effect finishes."

Suitability

While women said all medicines are heat generating, they clarified that the extent to which heating effects were felt depended on the person's blood. People have hot or cold blood, which reacts to hot or cold foods and medicines. Hot-blooded people were described as more sensitive to heat, getting rashes and being irritable by nature:
Aziza: "Yes. It [blood] *is hot or cold, depending on the person's body makeup. We practice remedies by ourselves… for decreasing the heat of the body."*

Women discussed how contraceptives 'suit' or do not suit an individual. Many tried one method then switched to another because it did not suit them. Women understood each person to be different, and that each method had different effects on different people:
Pari: "Everyone says that the tube [IUD] *suits some people and is better, but others whom it does not suit, it causes damage."*

Qamar: "If it suits a woman, then they keep taking. And there are some women, like me, the injection harmed me, so I left it. Like these pills now suit me, in the same way there are some women whom the injection suits. Then they keep using the injection."

Women discussed how, after some time, negative effects of medicines could wear off and suit them better.

DISCUSSION

Participants were familiar with the strengths and weaknesses of multiple therapeutic approaches, and moved easily between them depending on the nature of the problem and whether the initial approach was considered effective. Women generally preferred modern approaches as providing more powerful and rapid results - and

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

as the only choice for fertility control - but expressed concerns about long-term effects. Concepts of medicinal potency reflected those in other studies. For example, Nichter reports that Indian villagers perceived that modern medicine offered a quick cure but eventually harmed overall health.[18]

The contraceptive as object was meaningful for women. Particularly meaningful were fear of injection pain and discomfort about IUD insertion, both affecting contraceptive choices.[35 45] Despite preferring modern contraception, women used traditional medicine idioms to explain contraceptive objects and how these worked within their bodies. Women's perceptions of how contraceptives affected their health were grounded in the hot-cold explanatory idiom.[38] This idiom of the heating and cooling effects of food and medicine, combined with an individual's hot or cold blood, is found in many traditional health approaches including Chinese, North Indian, and South American.[39-44] The hot-cold concept is rooted in Hippocratic humoral medicine that spread via Arab influence.[41] Nichter describes Western medicines as heating and ayurvedic medicines as neutral, in reference to the speed and uncontrolled manner in which the former acts and perceived effect on the blood.[18]

In Pakistan, the hot-cold idiom is an essential component of *hikmat*. Although *hikmat* was not a preferred therapeutic approach for participants, this idiom was essential to their understanding of how contraceptives worked and why individuals reacted differently. Women reported menstrual irregularities, weight gain and weakness as the main interconnected problems caused by the heating properties of contraceptives. While no other literature from Pakistan was found relating women's perceptions of contraception to this idiom, it was overwhelmingly part of participants' vocabulary. Weakness from already heated blood could be further aggravated by the heating effects of contraceptives. Women spoke of discontinuing or changing methods because of such side effects, supporting Casterline and others' conclusion that widespread concerns about adverse health consequences act as a barrier to adoption and continued usage of contraceptives.[10 24]

Women worldwide have perceptions about menstrual bleeding and what is normal and natural. Participants perceived a regular menstrual flow as healthy. Similarly, women in Mali and South Africa equated menstruation with the womb being cleared of 'dirt,' thus allowing good health, so methods that interrupt the natural menstrual pattern were considered unacceptable.[24] Participants associated menstrual irregularities (e.g. reduced or increased flow) with dangerous outcomes from bloodlessness, weight gain and disease, and related them causally to the heating effects of contraceptives. Thus, injections were often perceived as the most heating since they most often led to menstrual irregularities. Several women used nutritional and herbal remedies to counteract the side-effects of modern medicines such as contraceptives, usually the perceived heating and weakening effects.[16 17]

This exploratory study drew from the experiences of a small sample of twenty women, most of whom had experience of using some or all of the contraceptives discussed. Data saturation was not attempted due to time and security concerns. However, findings – particularly regarding the importance of the hot-cold idiom and menstrual regularity - suggest opportunities for further research.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

CONCLUSIONS

Study findings support existing research on contraceptive usage. Most women wanted family planning, but were not entirely comfortable with their experiences of contraceptive use. Findings provide explanatory models from women themselves that could, with further research, inform health messages and family planning counselling, strengthening programmes in Karachi and potentially elsewhere in Pakistan.

ACKNOWLEDGMENTS

Authors thank the women from Shah Faisal Colony who shared their perspectives and experiences. Thanks to the RLCC health team for their facilitation and support.

CONTRIBUTORS

Both authors contributed substantially to study design and data interpretation. KM conceived of the study, collected data, and drafted the article, with critical input and revision by NH. Both authors approved the final version before publication.

FUNDING

Author salaries and costs were provided by their respective institutions. No additional funding was sought.

ETHICAL APPROVAL

The study was approved by the ethics committee of the London School of Hygiene & Tropical Medicine (LSHTM) in the United Kingdom and the Institutional Review Board of Interactive Research and Development in Pakistan.

COMPETING INTERESTS

None.

REFERENCES

1. NIPS. Pakistan Demographic and Health Survey 2006-2007. Islamabad: National Institute of Population Studies, 2007.
2. PCO. Estimated population of Pakistan. Secondary Estimated population of Pakistan 2011.
3. World Bank. Data on annual population growth (%) http://data.worldbank.org/indicator/SP.POP.GROW (accessed Dec 2012), 2011.
4. Zafar MI. Husband-wife roles as a correlate of contraceptive and fertility behaviour. Pakistan development review 1996;**35**(2):145-70
5. Mahmood N, Ringheim K. Factors affecting contraceptive use in Pakistan. Pakistan development review 1996;**35**(1):1-22
6. Nasir JA, Hinde A. Factors associated with contraceptive approval among religious leaders in Pakistan. Journal of biosocial science 2011;**43**(5):587-96 doi: 10.1017/S0021932011000216[published Online First: Epub Date]|.
7. Saleem A, Pasha GR. Women's reproductive autonomy and barriers to contraceptive use in Pakistan. The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception 2008;**13**(1):83-9 doi: 10.1080/01443610701577107[published Online First: Epub Date]|.
8. GoP. Development Amidst Crisis, Pakistan Millennium Development Goals Report Islamabad: Centre for Poverty Reduction and Social Policy Development, Planning Commission, 2010.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

9. Fikree FF, Saleem S, Sami N. A quality of care issue: appropriate use and efficacy knowledge of five contraceptive methods: views of men and women living in low socioeconomic settlements of Karachi, Pakistan. JPMA. The Journal of the Pakistan Medical Association 2005;**55**(9):363-8
10. Casterline JB, Sathar ZA, ul Haque M. Obstacles to contraceptive use in Pakistan: a study in Punjab. Studies in family planning 2001;**32**(2):95-110
11. Zafar MI, Ford N, Ankomah A. Significance of beliefs and values in predicting fertility and contraceptive behaviour in Pakistan. Journal of biosocial science 1995;**27**(3):301-18
12. Jafarey SN. Maternal mortality in Pakistan--compilation of available data. JPMA. The Journal of the Pakistan Medical Association 2002;**52**(12):539-44
13. Hamid S, Stephenson R. Provider and health facility influences on contraceptive adoption in urban Pakistan. International family planning perspectives 2006;**32**(2):71-8 doi: 10.1363/ifpp.32.071.06[published Online First: Epub Date]|.
14. Shaikh B. Unmet need for family planning in Pakistan – PDHS 2006–2007: it's time to re-examine déjà vu. Open Access Journal of Contraception 2010;**1**:113-18
15. Carton TW, Agha S. Changes in contraceptive use and method mix in Pakistan: 1990-91 to 2006-07. Health policy and planning 2011 doi: 10.1093/heapol/czr022[published Online First: Epub Date]|.
16. Shaikh SH, Malik F, James H, Abdul H. Trends in the use of complementary and alternative medicine in Pakistan: a population-based survey. J Altern Complement Med 2009;**15**(5):545-50 doi: 10.1089/acm.2008.0232[published Online First: Epub Date]|.
17. Shaikh BT, Hatcher J. Complementary and Alternative Medicine in Pakistan: Prospects and Limitations. Evidence-based complementary and alternative medicine : eCAM 2005;**2**(2):139-42 doi: 10.1093/ecam/neh088[published Online First: Epub Date]|.
18. Nichter M. The layperson's perception of medicine as perspective into the utilization of multiple therapy systems in the Indian context. Social science & medicine. Medical anthropology 1980;**14B**(4):225-33
19. Kleinman A. *Patients and healers in the context of culture: An Exploration of the Borderland Between Anthropology, Medicine, and Psychiatry*: University of California Press, 1980.
20. Kleinman A. *The Illness Narratives: Suffering, Healing, & The Human Condition*: Basic Books, 1988.
21. Tolley E, Loza S, Kafafi L, Cummings S. The impact of menstrual side effects on contraceptive discontinuation: findings from a longitudinal study in Cairo, Egypt. International family planning perspectives 2005;**31**(1):15-23 doi: 10.1363/ifpp.31.15.05[published Online First: Epub Date]|.
22. Godfrey EM, Chin NP, Fielding SL, Fiscella K, Dozier A. Contraceptive methods and use by women aged 35 and over: A qualitative study of perspectives. BMC women's health 2011;**11**:5 doi: 10.1186/1472-6874-11-5[published Online First: Epub Date]|.
23. Sultana A, Qazilbash A. Factors associated with failure of family planning methods in Pakistan: Burhan village case study. Working Paper Series #91. Islamabad: Sustainable Development Policy Institute, 2004.
24. Williamson LM, Parkes A, Wight D, Petticrew M, Hart GJ. Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. Reproductive health 2009;**6**:3 doi: 10.1186/1742-4755-6-3[published Online First: Epub Date]|.
25. Zafar M, Habib-Ullah M, Rehman S, Abbasi S. Fertility regulating behaviour: a study of rural Punjab – Pakistan. Pakistan Journal of Applied Sciences 2003;**3**(6):376-84
26. Bhatti MH. Correlates of choice of contraceptive methods in Pakistan. Pakistan development review 1995;**34**(4 Pt. III):889-98
27. Rajasekar D, Bigrigg A. Pill knowledge amongst oral contraceptive users in family planning clinics in Scotland: facts, myths and fantasies. The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception 2000;**5**(1):85-90
28. Aleem N. Myths and misconceptions about contraceptive methods: An exploratory qualitative study amongst married youth of Karachi. Aga Khan University, 2010.
29. Ali S, Sophie R, Imam AM, et al. Knowledge, perceptions and myths regarding infertility among selected adult population in Pakistan: a cross-sectional study. BMC public health 2011;**11**:760 doi: 10.1186/1471-2458-11-760[published Online First: Epub Date]|.
30. Harcourt W. Sex, lies and population: a view from the north? . Working Paper Series #3. Islamabad: Sustainable Development Policy Institute, 1992.
31. Spiers J. New perspectives on vulnerability using emic and etic approaches. Journal of advanced nursing 2000;**31**(3):715-21
32. Scherer RF, Owen CL, Petrick JA, Brodzinski JD, Goyer KA. Initial development of an emic methodology for classification of stressful work situations. Perceptual and motor skills 1991;**73**(3 Pt 1):1004-6

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

33. Tripp-Reimer T. Reconceptualizing the construct of health: integrating emic and etic perspectives. Research in nursing & health 1984;**7**(2):101-9
34. Karachi City Government. Shah Faisal Town (http://www.karachicity.gov.pk/). accessed September 2012: City District Government Karachi, 2011.
35. Higgins JA, Hirsch JS. Pleasure, power, and inequality: incorporating sexuality into research on contraceptive use. American journal of public health 2008;**98**(10):1803-13 doi: 10.2105/AJPH.2007.115790[published Online First: Epub Date]|.
36. Smith C. Content Analysis and Narrative Analysis. In: Reis H, Judd C, eds. Handbook of Research Methods in Social and Personality Psychology: Cambridge University Press, 2000.
37. Kamran I, Arif MS, Vassos K. Concordance and discordance of couples living in a rural Pakistani village: perspectives on contraception and abortion--a qualitative study. Global public health 2011;**6 Suppl 1**:S38-51 doi: 10.1080/17441692.2011.590814[published Online First: Epub Date]|.
38. Pool R. Hot and cold as an explanatory model: the example of Bharuch district in Gujarat, India. Social science & medicine 1987;**25**(4):389-99
39. Barrett RJ, Lucas RH. Hot and cold in transformation: is Iban medicine humoral? Social science & medicine 1994;**38**(2):383-93
40. Harwood A. The hot-cold theory of disease. Implications for treatment of Puerto Rican patients. JAMA : the journal of the American Medical Association 1971;**216**(7):1153-8
41. Hartog J, Hartog EA. Cultural aspects of health and illness behavior in hospitals. The Western journal of medicine 1983;**139**(6):910-6
42. Hilgert NI, Gil GE. Reproductive medicine in northwest Argentina: traditional and institutional systems. Journal of ethnobiology and ethnomedicine 2007;**3**:19 doi: 10.1186/1746-4269-3-19[published Online First: Epub Date]|.
43. Singh A. Place of menstruation in the reproductive lives of women of rural North India. Indian Journal of Community Medicine 2006;**31**:10-14
44. Marcos S. Hot and cold classification in traditional Iguape medicine. Ethnology 1984;**23**(1):63-72
45. Kaneshiro B, Aeby T. Long-term safety, efficacy, and patient acceptability of the intrauterine Copper T-380A contraceptive device. International journal of women's health 2010;**2**:211-20

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

FIGURES

Figure 1 Map of Pakistan

Source: http://jagonews.com/wp-content/uploads/2010/02/Karachi-map.gif (accessed 20 April 2013)

Figure 2 Schematic map of Karachi showing the location of Shah Faisal Colony

Source: Karachi City Government: http://en.wikipedia.org/wiki/File:ShahFaisalTown_Karachi.PNG (accessed 20 April 2013)

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

COREQ Checklist[1] **for Marvi and Howard**

Nb.	Item	Responses
	Domain 1:	***Research team and reflexivity***
	Personal characteristics	
1	Interviewer	The first author conducted all interviews.
2	Credentials	At the time of this study, the first author was an experienced NGO manager, completing an MSc in Public Health. The second author was an early-career academic, completing a doctorate in public health.
3	Occupation	The first author was country manager of a health leadership training NGO. The second author was a lecturer in global health policy.
4	Gender	Both authors were female.
5	Experience/Training	Both authors had received masters-level training in qualitative study design, data collection, and analysis methods prior to the start of research. The second author had experience of conducting qualitative research.
	Relationship with participants	
6	Relationship established	The authors had no prior relationship with participants.
7	Participant knowledge of interviewer	Participants were informed about the interviewer's professional background, that she was conducting research as part of an MSc project and would seek to publish findings, and were given the opportunity to ask questions.
8	Interviewer characteristics	The interviewer was an experienced health professional, particularly interested in the research topic to help improve understanding of women's perspectives among reproductive health leadership trainees.
	Domain 2:	***Study design***
	Theoretical framework	
9	Methodological orientation and theory	Content analysis
	Participant selection	
10	Sampling	Participants were selected purposively to provide a range of contraceptive users and non-users.
11	Method of approach	Participants were approached face-to-face.
12	Sample size	20 participants.
13	Non-participation	All women selected participated. Two pilot interviews were excluded. One interview was excluded and replaced, as it had not been recorded.
	Setting	
14	Data collection setting	Data was collected in a private meeting room at a local clinic.
15	Presence of non-participants	Non-participants were not present during interviews.
16	Description of sample	Participants were women living in a low-income district of Karachi, within the RLCC catchment.
	Data collection	
17	Interview guide	An interview guide was developed and piloted.
18	Repeat interviews	Repeat interviews were not conducted.
19	Audio/Visual recording	Digital audio recording used.
20	Field notes	Field notes were made during or immediately after each interview.
21	Duration	Interviews lasted an average of 60 minutes.
22	Data saturation	Data saturation was discussed.
23	Transcripts returned	Transcripts were returned where possible to confirm accuracy.
	Domain 3:	***Data analysis and findings***
	Data analysis	
24	Number of data coders	Both authors were involved in coding.
25	Description of coding tree	Coding was non-hierarchical.
26	Derivation of themes	Themes were derived from the data.
27	Software	Software was not used.
28	Participant checking	It was not possible to contact participants for their feedback on analysis.
	Reporting	

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

29	Quotations presented	Quotations were presented, identified by pseudonym.
30	Data and findings consistent	Data and findings presented were consistent.
31	Clarity of major themes	Major themes were presented in findings.
32	Clarity of minor themes	Diverse cases and minor themes were discussed.

1. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International journal for quality in health care : journal of the International Society for Quality in Health Care / ISQua 2007;**19**(6):349-57 doi: 10.1093/intqhc/mzm042[published Online First: Epub Date]|.

For peer review only

Objects of temporary contraception: an exploratory study of women's perspectives in Karachi, Pakistan

Journal:	*BMJ Open*
Manuscript ID:	bmjopen-2013-003279.R1
Article Type:	Research
Date Submitted by the Author:	04-Jul-2013
Complete List of Authors:	Marvi, Kamyla; Institute of International Education, Karachi, Leadership Development for Mobilising Reproductive Health (LDM) Howard, Natasha; London School of Hygiene & Trop Med, Global Health and Development
Primary Subject Heading:	Qualitative research
Secondary Subject Heading:	Sexual health, Reproductive medicine
Keywords:	QUALITATIVE RESEARCH, PUBLIC HEALTH, REPRODUCTIVE MEDICINE

SCHOLARONE™
Manuscripts

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

OBJECTS OF TEMPORARY CONTRACEPTION: AN EXPLORATORY STUDY OF WOMEN'S PERSPECTIVES IN KARACHI, PAKISTAN

Kamyla Marvi[1] and Natasha Howard[2]

[1] Leadership Development for Mobilising Reproductive Health (LDM), Institute of International Education, Karachi, Pakistan; kamyla.marvi@gmail.com

[2] Department of Global Health and Development, London School of Hygiene and Tropical Medicine (LSHTM), London, UK

Correspondence to

Natasha Howard, Department of Global Health and Development, Faculty of Public Health and Policy, LSHTM, 15-17 Tavistock Place, London, WC1H 9SH; T: +44 (0)2079272144; F: +44 (0)207436 5389; E: natasha.howard@lshtm.ac.uk

Key words

Family planning, qualitative research, traditional medicine, Pakistan

Word count: 3,824

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

ABSTRACT

Objective

To explore perspectives of three modern contraceptive objects, using an *emic* approach, among women in Shah Faisal Colony, a low-income community in Karachi, Pakistan.

Methods

In-depth face-to-face interviews of non-users (n=5), injection users (n=7), pill users (n=4), and IUD users (n=4) were conducted in 2011. Qualitative content analysis with an inductive approach and manual thematic coding was used to analyse data.

Results

Awareness of family planning was high. Women described different therapeutic approaches, stating they generally preferred modern medicine for contraception as it was fastest and most powerful. They reported that fear of some contraceptive objects, particularly injections and IUDs, influenced their choices. Women explained their perceptions of how the heating effects of contraceptives could cause unwanted side-effects including menstrual irregularities, weight gain, and weakness, leading to disease.

Conclusions

Most women wanted family planning, but remained dissatisfied with available contraceptives and their effects. While women reported that they relied on modern medicine for contraception, their descriptions of how contraceptives affected their health relied on the hot-cold explanatory idiom of traditional medicine.

Article focus

- To explore women's understanding and interpretations of three modern contraceptives.

Key messages

- Women were knowledgeable about family planning and relied on modern contraceptives.
- Contraceptive potency and effects were interpreted using the hot-cold idiom of traditional medicine.
- Consideration of women's interpretive idioms could help providers improve health messages and family planning counselling.

Study strengths and limitations

- Use of qualitative methods provided rich insight into women's interpretations and decision-making regarding contraceptives.
- Available time and funding constrained the sample size, limiting inclusion of a potentially broader range of perspectives.

For peer review only

INTRODUCTION

Pakistan, the world's sixth most populous country, has an estimated population of 176 million.[1 2] Annual population growth of 2.1% resulted in the population quadrupling in the past fifty years with 41% below age fifteen.[1 3] Potential reasons are both demand-side (e.g. female autonomy, religious beliefs, son preference [4-7]) and supply-side (e.g. cost, poor distribution, and limited coverage of contraceptives [8-10]). A rise in political and religious extremism since the dictatorship of Zia ul Haq (1977-88), Pakistan's subsequent involvement in the international 'war on terror,' poor governance, and corruption have weakened the economy, worsening social indicators.[11] High population growth strains Pakistan's limited resources, affecting health indicators. For example, with reproductive-age women constituting almost one-quarter of Pakistan's total population, a low contraceptive prevalence rate (CPR) of 29.6%, with much lower rates among poor and rural populations, contributes to a high maternal mortality ratio of 260/100,000 - mostly preventable haemorrhage, eclampsia, and sepsis.[1 5 12 13]

Pakistan has had a population programme since the 1960s and family planning awareness is nearly universal, with 96% of women surveyed identifying at least one modern contraceptive method.[1 14] While modern contraceptives comprise 73% of Pakistan's CPR, temporary methods allowing birth spacing (e.g. pills, IUDs, injectables, implants, condoms) comprise 13.6% of current usage, of which half (6.8%) are condoms.[1] Thus, only a small proportion of Pakistani couples use temporary methods with evidence suggesting a significant unmet need for contraception (Table 1).[1 15 16]

Table 1 Percentage method usage among married women aged 15-49 in Pakistan

Method	Current usage	Ever used	Residence		Education			Wealth Quintile				
			Urban	Rural	Illiterate	Primary / Secondary	Higher	1	2	3	4	5
Hormonal pill	2.1	12.2	2.6	1.8	2.0	2.0	2.9	1.5	1.8	1.9	2.6	2.4
Injectable contraceptive	2.3	11.1	2.3	2.3	2.1	2.9	1.1	1.6	2.5	3.2	2.7	1.6
Intra-uterine contraceptive device (IUD)	2.3	8	2.6	2.1	1.9	2.6	4.5	1.0	1.5	2.8	1.7	4.8

Source: [1]

Pakistan is a predominantly Muslim society with formal, informal, and popular healthcare approaches coexisting. Pakistan's formal medical system includes modern (i.e. Western) medicine, westernised homeopathy, and traditional *hikmat*. *Hikmat* or *unani tibb* is traditional Greco-Arab medicine, widely practiced in Pakistan, with similarities to Indian *Ayurvedic* medicine. Modern medicine is the most common approach in urban settings and government facilities, but overlaps with traditional and folk approaches.[17 18] Shaikh and colleagues found health providers often presented false qualifications or interpreted modern medicine to suit patient beliefs.[17] While contraceptives are modern medicine, popular perceptions and practices are influenced by religion and other therapeutic approaches.[12 18] Nichter noted that multiple therapy systems coexist in most countries, despite the regulatory efforts of government or vested interests of

For peer review only

dominant therapy systems.[19] Kleinman classified the professional, traditional, and popular as three overlapping systems, while Nichter found providers underappreciated the ways popular ideas about medicine influenced healthcare seeking and compliance.[19-21]

Women's perceptions of contraceptives significantly influence their decisions to start or continue family planning in Pakistan, supporting recent global discourse on influences of side-effects on usage.[22-26] Bhatti and colleagues found 12.1% of non-users cited method-related reasons, including fear of side-effects and interference with normal bodily processes.[1 27] Sultana and colleagues found a 29% discontinuation rate for female methods in Punjab was primarily due to side-effects, as contraceptive users associated all subsequent health problems (e.g. obesity, body aches, high blood pressure, nausea, irregular bleeding, infertility) with contraceptive usage.[24]

Most studies approach contraceptive behaviour from medical or behavioural perspectives, with minimal consideration of the contraceptive objects used.[28] Such approaches can result in women's perspectives being minimised as misconceptions.[29 30] Little research has explored the explanatory models Pakistani women apply to their contraceptive beliefs.[29] The term 'misconception' already implies these beliefs are flawed, and that the alternative medical model provides the correct explanation. However, these beliefs are entrenched in age-old belief systems and experiences that are real and personal to women and those around them. Nishtar found these beliefs to be based on societal perceptions, which women considered must have some basis in truth to be so widespread.[29] Multiple sources of perception create the basis on which each woman makes decisions.[31] The objects used for temporary contraception have their own potency to affect the body's functioning, perceptions of which influence usage decisions (e.g. whether, which, how long?). Little *emic* data, showing behaviour or beliefs in culturally meaningful terms, connects popular perceptions of contraception to usage.[32 33]

This study examined perceptions of modern contraceptive objects, using an *emic* perspective, among women in a low-income community of Karachi, Pakistan.[34] The research question was 'What are these women's beliefs about contraceptive objects and do those beliefs affect usage decisions?' It contributes to the literature on unmet need by describing how popular perceptions affect usage. Study objectives were to:

- describe women's perceptions of three temporary contraceptives as objects (i.e. injections, pills, IUDs);
- consider how women's perceptions of contraceptive usage and potency within their own therapeutic paradigms affected usage decisions.

METHODS

Ethics approval was granted by the LSHTM research ethics committee in the United Kingdom and the Institutional Review Board of Interactive Research and Development in Pakistan.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

With approximately 18 million inhabitants, Karachi is the commercial, industrial and financial hub of Pakistan (Figure 1).[35] Shah Faisal Colony (Figure 2), with a population of over 335,000, has experienced violent civil clashes. It was chosen for its ethnic diversity and low socioeconomic level. A local non-governmental organisation, Rana Liaquat Craftsman Colony (RLCC), provided a community entry point, facilitating access with women. RLCC has provided basic clinic services in Shah Faisal Colony since 1954, providing services to approximately 5,400 families. Women living in the study site have access to contraceptives through door-to-door distribution of condoms and pills, and clinical access to IUDs and injectables through NGO workers. Contraceptives were sold for Pakistani Rupees 1 (US$0.01) per condom, Pakistani Rupees 10 (US$0.10) for oral pills, Pakistani Rupees 100 (US$1.0) for 3-month injectables, and Pakistani Rupees 300 (US$3.0) for IUD insertion.

In-depth face-to-face interviews were chosen to explore women's experiences and perceptions. Twenty participants were purposively sampled, for diversity of opinion, from the population of non-menopausal married women over age 20, living in Shah Faisal Colony, Karachi. No other inclusion and exclusion criteria were used. Researchers aimed for:

- 5 non-users of contraception;
- 5 injectable contraceptive users (1, 2 or 3-month dosage);
- 5 oral pill users;
- 5 IUD users.

Participants were recruited by RLCC outreach workers, trained for one day in qualitative recruitment methods, who distributed study information sheets and obtained written informed consent from all literate potential participants. Verbal consent was taken from illiterate participants after reading out and discussing information sheet and consent form with them. The lead author was responsible for final participant selection, reconfirmation of consent and conducting interviews in a private room at the RLCC health centre. Two pilot interviews were conducted to finalise the interview guide. The guide ensured themes of interest were covered, though interviews were conducted as loosely guided conversations to allow women control in defining topics. Interviews were digitally recorded with participant permission and took approximately one hour. Recordings were given a pseudonym to ensure confidentiality, which was also recorded on the consent form and kept in a locked file. Observations were recorded for each interview.

Interviews were transcribed in Urdu, translated into English, and typed into Microsoft Word by a professional transcriptionist and translator familiar with reproductive health terminology. Translations were checked by the interviewer, and participants where possible, to ensure accuracy. Transcripts were labelled by pseudonym and numbered by page and line.

Following principles of interpretive social research, the interviewer conducted initial analysis to increase interpretability and deepen understanding of social and emotional context.[36] Qualitative content analysis with manual thematic coding was used, with an inductive approach to building non-hierarchical themes and

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

identifying meaning.[37] Consensus was reached between authors on differences found. Data was triangulated by comparing responses to similar questions in different transcript sections.

FINDINGS

Twenty-one interviews were conducted. One, unrecorded, was excluded. Of 20 participants (Table 2), six were illiterate and others educated to secondary level, with two completing matriculation after grade 10 and five completing intermediate certification after grade 12. Most (i.e. 13 women) were housewives, three did piecework embroidery at home, and a few had outside jobs (e.g. domestic work, teaching, one actress). Half of husbands (i.e. 11) worked in low-income jobs (e.g. street merchants), six were semi-skilled or skilled labourers (e.g. electrician, driver, barber), while two husbands were unemployed. Women were of various ethnicities, including three Pathans, five Muhajir, and seven Punjabis. All were Muslim and most had resided in the area since childhood (7) or marriage (11). Participants averaged 31 years old (25-45 years), were married and still menstruating. Non-users were on average 10 years older than contraceptive users (38 versus 28). All had children, ranging from seven months to 25 years old. Participants had an average of three children each (range 1-10). Non-users had fewer male children on average, at 0.80 male and 2.6 female versus 1.5 male and 1.6 female for contraceptive users. Of the fifteen contraceptive users, seven used injectable contraceptives, four used contraceptive pills, and four used an IUD. Thirteen contraceptive users cited the expense of raising children as their primary reason for birth spacing, while two cited previous pregnancy complications.

Table 2 Participant demographics, ordered by contraceptive usage and age

Pseudonym	Usage	Age	Education	Origin	Living children	
					M	F
Ayesha	Non User		Grade 9	Haripur	2	1
Nadira	Non User	31	Intermediate	Pindi	0	2
Kaukab	Non User (pregnant)	37	Grade 5	Abbasi	0	4
Rashida	Non User	40	Grade 9	-	0	5
Aziza	Non User	45	Matriculation	Muhajir	2	1
Karima	Injection	25	Grade 8	Punjabi	1	0
Sofia	Injection	25-26	Grade 8	-	1	2
Farida Bibi	Injection	28	Intermediate	-	1	0
Rehmat	Injection	28	Intermediate	Muhajir	2	0
Talat	Injection	28	Illiterate	Punjabi	0	4
Gul Zehra	Injection	33	Illiterate	Pathan	2	8
Nasreen	Injection	35	Matriculation	Punjabi	2	1
Misbah	Pills		Illiterate	Pathan	1	1
Qamar	Pills	23	Grade 8	Punjabi	1	1
Pari	Pills	28	Illiterate	Punjabi	2	2

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Insiya	Pills	28	Intermediate	-	2	1
Shazia	IUD		Illiterate	Punjabi	1	1
Mariam	IUD	<30	Illiterate	Pathan	1	2
Shaista	IUD	30	Intermediate	Muhajir	2	1
Shehnaz	IUD	31	Grade 8	Muhajir	3	1

NB: Education in Pakistan is organised into primary (grades 1-5); middle (grades 6-8); high (grades 9-10, culminating in matriculation); intermediate (grades 11-12, culminating in intermediate diploma).

Emergent themes are organised under therapeutic systems, contraceptives as objects, and potency and side-effects.

Therapeutic systems

All women discussed multiple therapeutic systems, including doctors practicing through private and government services, lady health workers, traditional birth attendants, homeopaths, *hakeems*, and practitioners offering healing prayers.[17] Most women used home remedies and explored different systems with varying success:

Talat: "Yes we have tried all. We have had prayers done; we have taken medicines from doctors, and hakeems too. Some are good and effective."

Nadira: "For example, a complete treatment for jaundice does not exist in modern medicine, which simply advises to take more water and juices; but homeopathy has the treatment for this."

Women preferred the speed and power of modern treatments:

Talat: "Most of the time we take medicines from doctors [because] *we get relief more quickly. Children get better. Rather then taking remedies we more often take medicine from outside so that the children can be comfortable more quickly. They shouldn't suffer."*

Rehmat: "The difference is that the homeopathic impact is very late, and modern medicine, such as injections etc., has an immediate effect... A person recovers immediately."

Farida Bibi: "Very few people go to a Hakeem; and those that do are elderly. I mean to say, those who, because of their age are unable to use the medicines of a doctor as they are of greater power, they go to a Hakeem."

Women used home remedies or modern services for reproductive issues. Most chose delivery in hospitals or maternity clinics, with only four reporting giving birth with the help of a *dai* or traditional birth attendant. Nineteen of twenty participants expressed eagerness to space their children. Non-users spoke of birth spacing through breast-feeding or other natural methods, with one woman using withdrawal. Participants were not asked about birth limiting versus birth spacing. All women preferred modern contraceptives, and knew of no methods emerging from alternative therapy systems.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Contraceptives as objects

Women were shown injectable contraceptives, pills, and IUDs during interviews to elicit their perceptions.

All were familiar with injections as objects, as Pakistani practitioners commonly overprescribe them.[38] Women expressed different levels of fear, from mild to much stronger discomfort:

Rehmat: "The [contraceptive] injection hurts so much that I get shaken up, although I try to control myself. She says to leave the body loose, but when an injection is going inside, how I can leave it loose? My leg becomes numb. She says 'I don't know - this doesn't happen with anyone else, just you...'"

Some women said injections generally were a more powerful and faster way of delivering medicine to the body.

Rehmat: "When we eat medicine, it affects after a while. Injections effect immediately, they mix with the blood quickly."

Most women said contraceptive pills were easy to use, some suggesting they were mild or weak because they were small and needed to be taken daily.

Insiya: "These are so small. One doesn't even feel that one has taken something."

One woman explicitly related size to potency:

Ayesha: "Due to size they may have greater potency, the ones that are large-sized…"

Interviewer: "And this one that is small? (pointing to contraceptive pills)"

Ayesha: "It may be of lesser potency."

Women expressed greatest fear of IUDs. Vaginal insertion already brings a sense of discomfort within the cultural milieu of Muslim women. Many who commented were less familiar with IUDs, and several expressed hesitation about inserting a foreign object into the body.

Insiya: "When I went to get injected they showed me the IUD, that either I should use the injection or the IUD, but the mere sight of it appeared to be something dangerous"

Several worried it would hurt their husbands:

Shazia: "Yes, he experiences inconvenience. It is that wire-like thing, it sticks to him. He scolds me, 'Why did you get this done?' Later on he becomes normal. He says it is all right."

Several expressed concern about potential risks from IUD materials:

Misbah: "Plastic and flesh are different, it will do some harm."

Interviewer: "This is plastic, that's why it will cause problems?"

Misbah: "Yes, it's plastic. That's why it causes some problem or another."

Interviewer: "What problem?"

Misbah: "I don't know, but I don't find it good."

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Shaista: "Now copper is kept inside the wet body and something keeps on releasing from it. This is what people say. People used to tell me that it is rust and when it rusts from inside it will produce fungus inside the uterus and obviously fungus will be converted into cancer and many people complain of cancer."

Potency and side-effects

Colour

Most stated that an object's colour did not affect its potency but helped with identification. A few noted that lighter colours meant the medicine was gentler.

Shaista: "Obviously light colour medicines are more suitable and better, you might have seen that iron syrups are darker in colour and they have a different taste. When you drink it you will feel that you have eaten iron. It emits a smell like iron and does not suit us."

Heat

Nearly all discussed medicinal potency and effect on their wellbeing in terms of heating *(garam taseer)* and cooling *(thandi taseer)* properties. Participants considered modern medicine heat generating and other therapies less so.

Farida Bibi: "One hears that the medicines of the Hakeem are herbal and they are cooling. Even if these medicines do not bring relief, they do not cause harm."

All women identified contraceptives as 'heating,' with pills and injections particularly, considered more heating than other modern medicines:

Ayesha: "These things generate heat into one's body; one feels upset. If I take a tablet I feel uneasy and my heart pounds."

Interviewer: "What is its effect?"

Qamar: "It is hot…

Interviewer: "Are all tablets hot?"

Qamar: "Some are hotter than others."

Interviewer: "Do you think these [contraceptives] are hotter or cooler?"

Qamar: "Yes, these are hotter."

Women described the heating effect of contraceptives as resulting in, or further accentuating, irregular or excessive menstruation, weakness, and weight gain. Most said contraceptive heat resulted in excess bleeding.

Shehnaz: "I got it [IUD] *placed that's why I have more flow of menstruation; that happens with everyone."*

Several equally interpreted missed menstruation as heat damage, discussing herbal remedies to encourage the onset of delayed menstruation:

Nasreen: "Obviously, they [contraceptive injections] *are heat-generating. They may be burning the blood."*

Interviewer: "What do you mean by burning the blood as you cannot see the process?"

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Nasreen: "Just what elder women say; girls take injections; the blood gets burned; there is no menstruation."

Others focused on weakness and swelling.

Pari: "If a woman is weak she shouldn't take it. I know how difficult it is for me. She won't tolerate it well. She will be so tired from taking pills. They are very hot and because they are hot they will rot your blood. You will feel unwell."

Nadira: "I was not like I am today. There is more swelling in my body. When one takes more medicines, I think it harms the body."

Interviewer: "You are saying that it is due to hot medicines?"

Nadira: "Yes it is due to heat."

Menstruation

A regular flow of menstruation was considered normal and healthy by all women. Women associated irregular bleeding with weakness, weight gain, and disease. Women associated menstrual irregularities with all three contraceptives, but those using injectables complained most:

Nasreen: "I stopped taking [contraceptive] *injections; I say that the flow of menstruation is also essential."*

Most reported menstruation as a form of cleansing. If it did not occur regularly then weight gain or serious disease could follow:

Farida Bibi: "I too fear that my periods may stop and that my abdomen starts bulging."

Nasreen: "They say that if menstruation stops it causes internal diseases. Tumours are formed, obviously, if something dirty doesn't find its way out."

Women associated both excessive and insufficient menstruation with weakness. Perspectives varied as to whether weakness caused irregular bleeding or vice versa.

Farida Bibi: "Some have excessive menses; they have it twice a month; as a result of which one gets weaker. For example, in our home there is my elder sister-in-law; it [IUD] *did not suit her. She goes through excessive menstruation, even more than before. She is getting weaker day by day."*

Talat: "When it used to come every month it was ok. Now it is every 2-3 months. Then sometimes it is scanty and sometimes it is heavy."

Interviewer: "How does that affect a woman?"

Talat: "It causes weakness. When women menstruate, then weakness is relieved."

Long-term effects

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Women's perspectives were mixed whether long-term or repeated usage of contraception was harmful. Some, who felt comfortable with their method of contraception, said that extended usage of five to ten years was harmless:

Ayesha: "What effect would it be? No, nothing..."

Interviewer: "Nothing?"

Ayesha: "It depends on you. You should take care of yourself."

Others were concerned about blood pressure, infertility, uterine damage, obesity, and 'problems with the blood'. The most common concern was temporary infertility:

Talat: "You won't get pregnant. When the effect of medicine finishes in the body, then pregnancy occurs. My niece had the injection. When she left the injection, a year or so after, when the effect of the medicine finished, she conceived."

Nasreen: "If you use something in routine you should give a gap in between…"

Interviewer: "So if I desire child spacing of five years and if I use injections continuously?"

Nasreen: "No, don't do that!"

Interviewer: "What is the risk involved in that?"

Nasreen: "The risk is that the menstruation will stop altogether."

Interviewer: "So is that risky?"

Nasreen: "Yes, that is dangerous!"

One participant stated that prolonged usage of medicines reduces efficacy:

Rashida: "Anything stops having an effect. If you continuously use a medicine its effect finishes."

Suitability

While women said all medicines are heat generating, they clarified that the extent to which heating effects were felt depended on the person's blood. People have hot or cold blood, which reacts to hot or cold foods and medicines. Hot-blooded people were described as more sensitive to heat, getting rashes and being irritable by nature:

Aziza: "Yes. It [blood] *is hot or cold, depending on the person's body makeup. We practice remedies by ourselves… for decreasing the heat of the body."*

Women discussed how contraceptives 'suit' or do not suit an individual. Many tried one method then switched to another because it did not suit them. Women understood each person to be different, and that each method had different effects on different people:

Pari: "Everyone says that the tube [IUD] *suits some people and is better, but others whom it does not suit, it causes damage."*

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Qamar: "If it suits a woman, then they keep taking. And there are some women, like me, the [contraceptive] *injection harmed me, so I left it. Like these pills now suit me, in the same way there are some women whom the injection suits. Then they keep using the injection."*

Women discussed how, after some time, negative effects of medicines could wear off and suit them better.

DISCUSSION

Participants were familiar with the strengths and weaknesses of multiple therapeutic approaches, and moved easily between them depending on the nature of the problem and whether the initial approach was considered effective. Women generally preferred modern approaches as providing more powerful and rapid results - and as the only choice for fertility control - but expressed concerns about long-term effects. Concepts of medicinal potency reflected those in other studies. For example, Nichter reports that Indian villagers perceived that modern medicine offered a quick cure but eventually harmed overall health.[19]

The contraceptive as object was meaningful for women. Particularly meaningful were fear of injection pain and discomfort about IUD usage, both affecting contraceptive choices.[36 39] Despite preferring modern contraception, women used traditional medicine idioms to explain contraceptive objects and how these worked within their bodies. Women's perceptions of how contraceptives affected their health were grounded in the hot-cold explanatory idiom.[40] This idiom of the heating and cooling effects of food and medicine, combined with an individual's hot or cold blood, is found in many traditional health approaches including Chinese, North Indian, and South American.[41-46] The hot-cold concept is rooted in Hippocratic humoral medicine that spread via Arab influence.[43] Nichter describes Western medicines as heating and ayurvedic medicines as neutral, in reference to the speed and uncontrolled manner in which the former acts and perceived effect on the blood.[19]

In Pakistan, the hot-cold idiom is an essential component of *hikmat*. Although *hikmat* was not a preferred therapeutic approach for participants, this idiom was essential to their understanding of the effects of contraceptives on their bodies and why individuals reacted differently. Women reported menstrual irregularities, weight gain and weakness as the main interconnected problems caused by the heating properties of contraceptives. While no other literature from Pakistan was found relating women's perceptions of contraception to this idiom, it was overwhelmingly part of participants' vocabulary. Weakness from already heated blood could be further aggravated by the heating effects of contraceptives. Women spoke of discontinuing or changing methods because of such side effects, supporting Casterline and others' conclusion that widespread concerns about adverse health consequences act as a barrier to adoption and continued usage of contraceptives.[10 25]

Women worldwide have perceptions about menstrual bleeding and what is normal and natural. Participants perceived a regular menstrual flow as healthy. Similarly, women in Mali and South Africa equated menstruation with the womb being cleared of 'dirt,' thus allowing good health, so methods that interrupt the

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

natural menstrual pattern were considered unacceptable.[25] Participants associated menstrual irregularities (e.g. reduced or increased flow) with dangerous outcomes from bloodlessness, weight gain and disease, and related them causally to the heating effects of contraceptives. Thus, injections were often perceived as the most heating since they most often led to menstrual irregularities. Several women used nutritional and herbal remedies to counteract the side-effects of modern medicines such as contraceptives, usually the perceived heating and weakening effects.[17 18]

This exploratory study drew from the experiences of a small sample of twenty women, most of whom had experience of using some or all of the contraceptives discussed. Data saturation was not attempted due to time and security concerns. However, findings – particularly regarding the importance of the hot-cold idiom and menstrual regularity - suggest opportunities for further research.

CONCLUSIONS

Study findings support existing research on contraceptive usage. Most women wanted family planning, but were not entirely comfortable with their experiences of contraceptive use. The Pakistan government implements a nationwide Lady Health Worker Program through the Provincial Health Departments, and a Family Welfare Worker Program through the Population Welfare Departments of each province. These aim to provide PHC services including door-to-door family planning counselling and distribution to women in their homes. A better understanding of women's concerns and explanatory models could provide more effective service delivery for family planning. Women's concerns regarding family planning side-effects and resulting health concerns could also inform research and development of contraceptives. Limitations of today's contraceptive technology are one reason that women are not using, or are uncomfortable with using, family planning methods. Thus, findings provide explanatory models from women themselves that could, with further research, inform health messages and family planning counselling, strengthening programmes in Karachi and potentially elsewhere in Pakistan.

ACKNOWLEDGMENTS

Authors thank the women from Shah Faisal Colony who shared their perspectives and experiences. Thanks to the RLCC health team for their facilitation and support.

CONTRIBUTORS

Both authors contributed substantially to study design and data interpretation. KM conceived of the study, collected data, and drafted the article, with critical input and revision by NH. Both authors approved the final version before publication.

FUNDING

Author salaries and costs were provided by their respective institutions. No additional funding was sought.

ETHICAL APPROVAL

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

The study was approved by the ethics committee of the London School of Hygiene & Tropical Medicine (LSHTM) in the United Kingdom and the Institutional Review Board of Interactive Research and Development in Pakistan.

COMPETING INTERESTS

None.

REFERENCES

1. NIPS. Pakistan Demographic and Health Survey 2006-2007. Islamabad: National Institute of Population Studies, 2007.
2. PCO. Estimated population of Pakistan. Secondary Estimated population of Pakistan 2011.
3. World Bank. Data on annual population growth (%) http://data.worldbank.org/indicator/SP.POP.GROW (accessed Dec 2012), 2011.
4. Zafar MI. Husband-wife roles as a correlate of contraceptive and fertility behaviour. Pakistan development review 1996;**35**(2):145-70
5. Mahmood N, Ringheim K. Factors affecting contraceptive use in Pakistan. Pakistan development review 1996;**35**(1):1-22
6. Nasir JA, Hinde A. Factors associated with contraceptive approval among religious leaders in Pakistan. Journal of biosocial science 2011;**43**(5):587-96 doi: 10.1017/S0021932011000216[published Online First: Epub Date]|.
7. Saleem A, Pasha GR. Women's reproductive autonomy and barriers to contraceptive use in Pakistan. The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception 2008;**13**(1):83-9 doi: 10.1080/01443610701577107[published Online First: Epub Date]|.
8. GoP. Development Amidst Crisis, Pakistan Millennium Development Goals Report Islamabad: Centre for Poverty Reduction and Social Policy Development, Planning Commission, 2010.
9. Fikree FF, Saleem S, Sami N. A quality of care issue: appropriate use and efficacy knowledge of five contraceptive methods: views of men and women living in low socioeconomic settlements of Karachi, Pakistan. JPMA. The Journal of the Pakistan Medical Association 2005;**55**(9):363-8
10. Casterline JB, Sathar ZA, ul Haque M. Obstacles to contraceptive use in Pakistan: a study in Punjab. Studies in family planning 2001;**32**(2):95-110
11. Javaid U. Corruption and its Deep Impact on Good Governance in Pakistan. Pakistan Economic and Social Review 2010;**48**(1 (Summer)):123-34
12. Zafar MI, Ford N, Ankomah A. Significance of beliefs and values in predicting fertility and contraceptive behaviour in Pakistan. Journal of biosocial science 1995;**27**(3):301-18
13. Jafarey SN. Maternal mortality in Pakistan--compilation of available data. JPMA. The Journal of the Pakistan Medical Association 2002;**52**(12):539-44
14. Hamid S, Stephenson R. Provider and health facility influences on contraceptive adoption in urban Pakistan. International family planning perspectives 2006;**32**(2):71-8 doi: 10.1363/ifpp.32.071.06[published Online First: Epub Date]|.
15. Shaikh B. Unmet need for family planning in Pakistan – PDHS 2006–2007: it's time to re-examine déjà vu. Open Access Journal of Contraception 2010;**1**:113-18
16. Carton TW, Agha S. Changes in contraceptive use and method mix in Pakistan: 1990-91 to 2006-07. Health policy and planning 2011 doi: 10.1093/heapol/czr022[published Online First: Epub Date]|.
17. Shaikh SH, Malik F, James H, Abdul H. Trends in the use of complementary and alternative medicine in Pakistan: a population-based survey. J Altern Complement Med 2009;**15**(5):545-50 doi: 10.1089/acm.2008.0232[published Online First: Epub Date]|.
18. Shaikh BT, Hatcher J. Complementary and Alternative Medicine in Pakistan: Prospects and Limitations. Evidence-based complementary and alternative medicine : eCAM 2005;**2**(2):139-42 doi: 10.1093/ecam/neh088[published Online First: Epub Date]|.
19. Nichter M. The layperson's perception of medicine as perspective into the utilization of multiple therapy systems in the Indian context. Social science & medicine. Medical anthropology 1980;**14B**(4):225-33
20. Kleinman A. *Patients and healers in the context of culture: An Exploration of the Borderland Between Anthropology, Medicine, and Psychiatry*: University of California Press, 1980.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

21. Kleinman A. *The Illness Narratives: Suffering, Healing, & The Human Condition*: Basic Books, 1988.
22. Tolley E, Loza S, Kafafi L, Cummings S. The impact of menstrual side effects on contraceptive discontinuation: findings from a longitudinal study in Cairo, Egypt. International family planning perspectives 2005;**31**(1):15-23 doi: 10.1363/ifpp.31.15.05[published Online First: Epub Date]|.
23. Godfrey EM, Chin NP, Fielding SL, Fiscella K, Dozier A. Contraceptive methods and use by women aged 35 and over: A qualitative study of perspectives. BMC women's health 2011;**11**:5 doi: 10.1186/1472-6874-11-5[published Online First: Epub Date]|.
24. Sultana A, Qazilbash A. Factors associated with failure of family planning methods in Pakistan: Burhan village case study. Working Paper Series #91. Islamabad: Sustainable Development Policy Institute, 2004.
25. Williamson LM, Parkes A, Wight D, Petticrew M, Hart GJ. Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. Reproductive health 2009;**6**:3 doi: 10.1186/1742-4755-6-3[published Online First: Epub Date]|.
26. Zafar M, Habib-Ullah M, Rehman S, Abbasi S. Fertility regulating behaviour: a study of rural Punjab – Pakistan. Pakistan Journal of Applied Sciences 2003;**3**(6):376-84
27. Bhatti MH. Correlates of choice of contraceptive methods in Pakistan. Pakistan development review 1995;**34**(4 Pt. III):889-98
28. Rajasekar D, Bigrigg A. Pill knowledge amongst oral contraceptive users in family planning clinics in Scotland: facts, myths and fantasies. The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception 2000;**5**(1):85-90
29. Aleem N. Myths and misconceptions about contraceptive methods: An exploratory qualitative study amongst married youth of Karachi. Aga Khan University, 2010.
30. Ali S, Sophie R, Imam AM, et al. Knowledge, perceptions and myths regarding infertility among selected adult population in Pakistan: a cross-sectional study. BMC public health 2011;**11**:760 doi: 10.1186/1471-2458-11-760[published Online First: Epub Date]|.
31. Harcourt W. Sex, lies and population: a view from the north? . Working Paper Series #3. Islamabad: Sustainable Development Policy Institute, 1992.
32. Spiers J. New perspectives on vulnerability using emic and etic approaches. Journal of advanced nursing 2000;**31**(3):715-21
33. Scherer RF, Owen CL, Petrick JA, Brodzinski JD, Goyer KA. Initial development of an emic methodology for classification of stressful work situations. Perceptual and motor skills 1991;**73**(3 Pt 1):1004-6
34. Tripp-Reimer T. Reconceptualizing the construct of health: integrating emic and etic perspectives. Research in nursing & health 1984;**7**(2):101-9
35. Karachi City Government. Shah Faisal Town (http://www.karachicity.gov.pk/). accessed September 2012: City District Government Karachi, 2011.
36. Higgins JA, Hirsch JS. Pleasure, power, and inequality: incorporating sexuality into research on contraceptive use. American journal of public health 2008;**98**(10):1803-13 doi: 10.2105/AJPH.2007.115790[published Online First: Epub Date]|.
37. Smith C. Content Analysis and Narrative Analysis. In: Reis H, Judd C, eds. Handbook of Research Methods in Social and Personality Psychology: Cambridge University Press, 2000.
38. Kamran I, Arif MS, Vassos K. Concordance and discordance of couples living in a rural Pakistani village: perspectives on contraception and abortion--a qualitative study. Global public health 2011;**6 Suppl 1**:S38-51 doi: 10.1080/17441692.2011.590814[published Online First: Epub Date]|.
39. Kaneshiro B, Aeby T. Long-term safety, efficacy, and patient acceptability of the intrauterine Copper T-380A contraceptive device. International journal of women's health 2010;**2**:211-20
40. Pool R. Hot and cold as an explanatory model: the example of Bharuch district in Gujarat, India. Social science & medicine 1987;**25**(4):389-99
41. Barrett RJ, Lucas RH. Hot and cold in transformation: is Iban medicine humoral? Social science & medicine 1994;**38**(2):383-93
42. Harwood A. The hot-cold theory of disease. Implications for treatment of Puerto Rican patients. JAMA : the journal of the American Medical Association 1971;**216**(7):1153-8
43. Hartog J, Hartog EA. Cultural aspects of health and illness behavior in hospitals. The Western journal of medicine 1983;**139**(6):910-6
44. Hilgert NI, Gil GE. Reproductive medicine in northwest Argentina: traditional and institutional systems. Journal of ethnobiology and ethnomedicine 2007;**3**:19 doi: 10.1186/1746-4269-3-19[published Online First: Epub Date]|.
45. Singh A. Place of menstruation in the reproductive lives of women of rural North India. Indian Journal of Community Medicine 2006;**31**:10-14

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

46. Marcos S. Hot and cold classification in traditional Iguape medicine. Ethnology 1984;**23**(1):63-72

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

FIGURES

Figure 1 Map of Pakistan

Source: http://jagonews.com/wp-content/uploads/2010/02/Karachi-map.gif (accessed 20 April 2013)

Figure 2 Schematic map of Karachi showing the location of Shah Faisal Colony

Source: Karachi City Government: http://en.wikipedia.org/wiki/File:ShahFaisalTown_Karachi.PNG (accessed 20 April 2013)

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

OBJECTS OF TEMPORARY CONTRACEPTION: AN EXPLORATORY STUDY OF WOMEN'S PERSPECTIVES IN KARACHI, PAKISTAN

Kamyla Marvi[1] and Natasha Howard[2]

[1] Leadership Development for Mobilising Reproductive Health (LDM), Institute of International Education, Karachi, Pakistan; kamyla.marvi@gmail.com

[2] Department of Global Health and Development, London School of Hygiene and Tropical Medicine (LSHTM), London, UK

Correspondence to

Natasha Howard, Department of Global Health and Development, Faculty of Public Health and Policy, LSHTM, 15-17 Tavistock Place, London, WC1H 9SH; T: +44 (0)2079272144; F: +44 (0)207436 5389; E: natasha.howard@lshtm.ac.uk

Key words

Family planning, qualitative research, traditional medicine, Pakistan

Word count: 3,824

For peer review only

ABSTRACT

Objective

To explore perspectives of three modern contraceptive objects, using an *emic* approach, among women in Shah Faisal Colony, a low-income community in Karachi, Pakistan.

Methods

In-depth face-to-face interviews of non-users (n=5), injection users (n=7), pill users (n=4), and IUD users (n=4) were conducted in 2011. Qualitative content analysis with an inductive approach and manual thematic coding was used to analyse data.

Results

Awareness of family planning was high. Women described different therapeutic approaches, stating they generally preferred modern medicine for contraception as it was fastest and most powerful. They reported that fear of some contraceptive objects, particularly injections and IUDs, influenced their choices. Women explained their perceptions of how the heating effects of contraceptives could cause unwanted side-effects including menstrual irregularities, weight gain, and weakness, leading to disease.

Conclusions

Most women wanted family planning, but remained dissatisfied with available contraceptives and their effects. While women reported that they relied on modern medicine for contraception, their descriptions of how contraceptives affected their health relied on the hot-cold explanatory idiom of traditional medicine.

Article focus

- To explore women's understanding and interpretations of three modern contraceptives.

Key messages

- Women were knowledgeable about family planning and relied on modern contraceptives.
- Contraceptive potency and effects were interpreted using the hot-cold idiom of traditional medicine.
- Consideration of women's interpretive idioms could help providers improve health messages and family planning counselling.

Study strengths and limitations

- Use of qualitative methods provided rich insight into women's interpretations and decision-making regarding contraceptives.
- Available time and funding constrained the sample size, limiting inclusion of a potentially broader range of perspectives.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

INTRODUCTION

Pakistan, the world's sixth most populous country, has an estimated population of 176 million.[1 2] Annual population growth of 2.1% resulted in the population quadrupling in the past fifty years with 41% below age fifteen.[1 3] Potential reasons are both demand-side (e.g. female autonomy, religious beliefs, son preference [4-7]) and supply-side (e.g. cost, poor distribution, and limited coverage of contraceptives [8-10]). A rise in political and religious extremism since the dictatorship of Zia ul Haq (1977-88), Pakistan's subsequent involvement in the international 'war on terror,' poor governance, and ~~resulting from rampant~~ corruption have weakened the economy, worsening social indicators.[11] High population growth strains Pakistan's limited resources, affecting health indicators. For example, with reproductive-age women constituting almost one-quarter of Pakistan's total population, a low contraceptive prevalence rate (CPR) of 29.6%, with much lower rates among poor and rural populations, contributes to a high maternal mortality ratio of 260/100,000 - mostly preventable haemorrhage, eclampsia, and sepsis.[1 5 12 13]

Pakistan has had a population programme since the 1960s and family planning awareness is nearly universal, with 96% of women surveyed identifying at least one modern contraceptive method.[1 14] While modern contraceptives comprise 73% of Pakistan's CPR, temporary methods allowing birth spacing (e.g. pills, IUDs, injectables, implants, condoms) comprise 13.6% of current usage, of which half (6.8%) are condoms.[1] Thus, only a small proportion of Pakistani couples use temporary methods with evidence suggesting a significant unmet need for contraception (Table 1).[1 15 16]

Table 1 Percentage~~%~~ m~~M~~ethod usage among married women aged 15-49 in Pakistan

Method	Current usage	Ever used	Residence		Education			Wealth Quintile				
			Urban	Rural	Illiterate	Primary / Secondary	Higher	1	2	3	4	5
Hormonal pill	2.1	12.2	2.6	1.8	2.0	2.0	2.9	1.5	1.8	1.9	2.6	2.4
Injectable contraceptive	2.3	11.1	2.3	2.3	2.1	2.9	1.1	1.6	2.5	3.2	2.7	1.6
Intra-uterine contraceptive device (IUD)	2.3	8	2.6	2.1	1.9	2.6	4.5	1.0	1.5	2.8	1.7	4.8

Source: [1]

Pakistan is a predominantly Muslim society with formal, informal, and popular healthcare approaches coexisting. Pakistan's formal medical system includes modern (i.e. Western) medicine, westernised homeopathy, and traditional *hikmat*. *Hikmat* or *unani tibb* is traditional Greco-Arab medicine, widely practiced in Pakistan, with similarities to Indian *Ayurvedic* medicine. Modern medicine is the most common approach in urban settings and government facilities, but overlaps with traditional and folk approaches.[17 18] Shaikh and colleagues found health providers often presented false qualifications or interpreted modern medicine to suit patient beliefs.[17] While contraceptives are modern medicine, popular perceptions and practices are influenced by religion and other therapeutic approaches.[12 18] Nichter noted that multiple therapy systems coexist in most countries, despite the regulatory efforts of government or vested interests of

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

dominant therapy systems.[19] Kleinman classified the professional, traditional, and popular as three overlapping systems, while Nichter found providers underappreciated the ways popular ideas about medicine influenced healthcare seeking and compliance.[19-21]

Women's perceptions of contraceptives significantly influence their decisions to start or continue family planning in Pakistan, supporting recent global discourse on influences of side-effects on usage.[22-26] Bhatti and colleagues found 12.1% of non-users cited method-related reasons, including fear of side-effects and interference with normal bodily processes.[1 27] Sultana and colleagues found a 29% discontinuation rate for female methods in Punjab was primarily due to side-effects, as contraceptive users associated all subsequent health problems (e.g. obesity, body aches, high blood pressure, nausea, irregular bleeding, infertility) with contraceptive usage.[24]

Most studies approach contraceptive behaviour from medical or behavioural perspectives, with minimal consideration of the contraceptive objects used.[28] Such approaches can result in women's perspectives being minimised as misconceptions.[29 30] Little research has explored the explanatory models Pakistani women apply to their contraceptive beliefs.[29] The term 'misconception' already implies these beliefs are flawed, and that the alternative medical model provides the correct explanation. However, these beliefs are entrenched in age-old belief systems and experiences that are real and personal to women and those around them. Nishtar found these beliefs to be based on societal perceptions, which women considered must have some basis in truth to be so widespread.[29] Multiple sources of perception create the basis on which each woman makes decisions.[31] The objects used for temporary contraception have their own potency to affect the body's functioning, perceptions of which influence usage decisions (e.g. whether, which, how long?). Little *emic* data, showing behaviour or beliefs in culturally meaningful terms, connects popular perceptions of contraception to usage.[32 33]

This study examined perceptions of modern contraceptive objects, using an *emic* perspective, among women in a low-income community of Karachi, Pakistan.[34] The research question was 'What are these women's beliefs about contraceptive objects and do those beliefs affect usage decisions?' It contributes to the literature on unmet need by describing how popular perceptions affect usage. Study objectives were to:

- describe women's perceptions of three temporary contraceptives as objects (i.e. injections, pills, IUDs);
- consider how women's perceptions of contraceptive usage and potency within their own therapeutic paradigms affected usage decisions.

METHODS

Ethics approval was granted by the LSHTM research ethics committee in the United Kingdom and the Institutional Review Board of Interactive Research and Development in Pakistan.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

With approximately 18 million inhabitants, Karachi is the commercial, industrial and financial hub of Pakistan (Figure 1).[35] Shah Faisal Colony (Figure 2), with a population of over 335,000, has experienced violent civil clashes. It was chosen for its ethnic diversity and low socioeconomic level. A local non-governmental organisation, Rana Liaquat Craftsman Colony (RLCC), provided a community entry point, facilitating access with women. RLCC has provided basic clinic services in Shah Faisal Colony since 1954, providing services to approximately 5,400 families. Women living in the study site have access to contraceptives through door-to-door distribution of condoms and pills, and clinical access to IUDs and injectables through NGO workers. Contraceptives were sold for Pakistani Rupees 1 (US$0.01) per condom, Pakistani Rupees 10 (US$0.10) for oral pills, Pakistani Rupees 100 (US$1.0) for 3-month injectables, and Pakistani Rupees 300 (US$3.0) for IUD insertion.

In-depth face-to-face interviews were chosen to explore women's experiences and perceptions. Twenty participants were purposively sampled, for diversity of opinion, from the population of non-menopausal married women over age 20, living in Shah Faisal Colony, Karachi. No other inclusion and exclusion criteria were used. Researchers aimed for:

- 5 non-users of contraception;
- 5 injectable contraceptive users (1, 2 or 3-month dosage);
- 5 oral pill users;
- 5 IUD users.

Participants were recruited by RLCC outreach workers, trained for one day in qualitative recruitment methods, who distributed study information sheets and obtained written informed consent from all literate potential participants. Verbal consent was taken from illiterate participants after reading out and discussing information sheet and consent form with them. The lead author was responsible for final participant selection, reconfirmation of consent and conducting interviews in a private room at the RLCC health centre. Two pilot interviews were conducted to finalise the interview guide. The guide ensured themes of interest were covered, though interviews were conducted as loosely guided conversations to allow women control in defining topics. Interviews were digitally recorded with participant permission and took approximately one hour. Recordings were given a pseudonym to ensure confidentiality, which was also recorded on the consent form and kept in a locked file. Observations were recorded for each interview.

Interviews were transcribed in Urdu, translated into English, and typed into Microsoft Word by a professional transcriptionist and translator familiar with reproductive health terminology. Translations were checked by the interviewer, and participants where possible, to ensure accuracy. Transcripts were labelled by pseudonym and numbered by page and line.

Following principles of interpretive social research, the interviewer conducted initial analysis to increase interpretability and deepen understanding of social and emotional context.[36] Qualitative content analysis with manual thematic coding was used, with an inductive approach to building non-hierarchical themes and

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

identifying meaning.[37] Consensus was reached between authors on differences found. Data was triangulated by comparing responses to similar questions in different transcript sections.

FINDINGS

Twenty-one interviews were conducted. One, unrecorded, was excluded. Of 20 participants (Table 2), six were illiterate and others educated to secondary level, with two completing matriculation after grade 10 and five completing intermediate certification after grade 12. Most (i.e. 13 women) were housewives, three did piecework embroidery at home, and a few had outside jobs (e.g. domestic work, teaching, one actress). Half of husbands (i.e. 11) worked in low-income jobs (e.g. street merchants), six were semi-skilled or skilled labourers (e.g. electrician, driver, barber), while two husbands were unemployed. Women were of various ethnicities, including three Pathans, five Muhajir, and seven Punjabis. All were Muslim and most had resided in the area since childhood (7) or marriage (11). Participants averaged 31 years old (25-45 years), were married and still menstruating. Non-users were on average 10 years older than contraceptive users (38 versus 28). All had children, ranging from seven months to 25 years old. Participants had an average of three children each (range 1-10). Non-users had fewer male children on average, at 0.80 male and 2.6 female versus 1.5 male and 1.6 female for contraceptive users. Of the fifteen contraceptive users, seven used injectable contraceptives, four used contraceptive pills, and four used an IUD. Thirteen contraceptive users cited the expense of raising children as their primary reason for birth spacing, while two cited previous pregnancy complications.

Table 2 Participant demographics, ordered by contraceptive usage and age

Pseudonym	Usage	Age	Education	Origin	Living children	
					M	F
Ayesha	Non User		Grade 9	Haripur	2	1
Nadira	Non User	31	Intermediate	Pindi	0	2
Kaukab	Non User (pregnant)	37	Grade 5	Abbasi	0	4
Rashida	Non User	40	Grade 9	-	0	5
Aziza	Non User	45	Matriculation	Muhajir	2	1
Karima	Injection	25	Grade 8	Punjabi	1	0
Sofia	Injection	25-26	Grade 8	-	1	2
Farida Bibi	Injection	28	Intermediate	-	1	0
Rehmat	Injection	28	Intermediate	Muhajir	2	0
Talat	Injection	28	Illiterate	Punjabi	0	4
Gul Zehra	Injection	33	Illiterate	Pathan	2	8
Nasreen	Injection	35	Matriculation	Punjabi	2	1
Misbah	Pills		Illiterate	Pathan	1	1
Qamar	Pills	23	Grade 8	Punjabi	1	1
Pari	Pills	28	Illiterate	Punjabi	2	2

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

Insiya	Pills	28	Intermediate	-	2	1
Shazia	IUD		Illiterate	Punjabi	1	1
Mariam	IUD	<30	Illiterate	Pathan	1	2
Shaista	IUD	30	Intermediate	Muhajir	2	1
Shehnaz	IUD	31	Grade 8	Muhajir	3	1

NB: Education in Pakistan is organised into primary (grades 1-5); middle (grades 6-8); high (grades 9-10, culminating in matriculation); intermediate (grades 11-12, culminating in intermediate diploma).

Emergent themes are organised under therapeutic systems, contraceptives as objects, and potency and side-effects.

Therapeutic systems

All women discussed multiple therapeutic systems, including doctors practicing through private and government services, lady health workers, traditional birth attendants, homeopaths, *hakeems*, and practitioners offering healing prayers.[17] Most women used home remedies and explored different systems with varying success:

Talat: "Yes we have tried all. We have had prayers done; we have taken medicines from doctors, and hakeems too. Some are good and effective."

Nadira: "For example, a complete treatment for jaundice does not exist in modern medicine, which simply advises to take more water and juices; but homeopathy has the treatment for this."

Women preferred the speed and power of modern treatments:

Talat: "Most of the time we take medicines from doctors [because] *we get relief more quickly. Children get better. Rather then taking remedies we more often take medicine from outside so that the children can be comfortable more quickly. They shouldn't suffer."*

Rehmat: "The difference is that the homeopathic impact is very late, and ~~allopathic~~modern medicine, such as injections etc., has an immediate effect... A person recovers immediately."

Farida Bibi: "Very few people go to a Hakeem; and those that do are elderly. I mean to say, those who, because of their age are unable to use the medicines of a doctor as they are of greater power, they go to a Hakeem."

Women used home remedies or modern services for reproductive issues. Most chose delivery in hospitals or maternity clinics, with only four reporting giving birth with the help of a *dai* or traditional birth attendant. Nineteen of twenty participants expressed eagerness to space their children. Non-users spoke of birth spacing through breast-feeding or other natural methods, with one woman using withdrawal. Participants were not asked about birth limiting versus birth spacing. All women preferred modern contraceptives, and knew of no methods emerging from alternative therapy systems.

For peer review only

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60

Contraceptives as objects

Women were shown injectable contraceptives, pills, and IUDs during interviews to elicit their perceptions.

All were familiar with injections as objects, as Pakistani practitioners commonly overprescribe them.[38] Women expressed different levels of fear, from mild to much stronger discomfort:

Rehmat: "The [contraceptive] injection hurts so much that I get shaken up, although I try to control myself. She says to leave the body loose, but when an injection is going inside, how I can leave it loose? My leg becomes numb. She says 'I don't know - this doesn't happen with anyone else, just you...'"

Some women said injections generally were a more powerful and faster way of delivering medicine to the body.

Rehmat: "When we eat medicine, it affects after a while. Injections effect immediately, they mix with the blood quickly."

Most women said contraceptive pills were easy to use, some suggesting they were mild or weak because they were small and needed to be taken daily.

Insiya: "These are so small. One doesn't even feel that one has taken something."

One woman explicitly related size to potency:

Ayesha: "Due to size they may have greater potency, the ones that are large-sized…"

Interviewer: "And this one that is small? (pointing to contraceptive pills)"

Ayesha: "It may be of lesser potency."

Women expressed greatest fear of IUDs. Vaginal insertion already brings a sense of discomfort within the cultural milieu of Muslim women. Many who commented were less familiar with IUDs, and several expressed hesitation about inserting a foreign object into the body.

Insiya: "When I went to get injected they showed me the IUD, that either I should use the injection or the IUD, but the mere sight of it appeared to be something dangerous"

Several worried it would hurt their husbands:

Shazia: "Yes, he experiences inconvenience. It is that wire-like thing, it sticks to him. He scolds me, 'Why did you get this done?' Later on he becomes normal. He says it is all right."

Several expressed concern about potential risks from IUD materials:

Misbah: "Plastic and flesh are different, it will do some harm."

Interviewer: "This is plastic, that's why it will cause problems?"

Misbah: "Yes, it's plastic. That's why it causes some problem or another."

Interviewer: "What problem?"

Misbah: "I don't know, but I don't find it good."

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Shaista: "Now copper is kept inside the wet body and something keeps on releasing from it. This is what people say. People used to tell me that it is rust and when it rusts from inside it will produce fungus inside the uterus and obviously fungus will be converted into cancer and many people complain of cancer."

Potency and side-effects

Colour

Most stated that an object's colour did not affect its potency but helped with identification. A few noted that lighter colours meant the medicine was gentler.

Shaista: "Obviously light colour medicines are more suitable and better, you might have seen that iron syrups are darker in colour and they have a different taste. When you drink it you will feel that you have eaten iron. It emits a smell like iron and does not suit us."

Heat

Nearly all discussed medicinal potency and effect on their wellbeing in terms of heating *(garam taseer)* and cooling *(thandi taseer)* properties. Participants considered modern medicine heat generating and other therapies less so.

Farida Bibi: "One hears that the medicines of the Hakeem are herbal and they are cooling. Even if these medicines do not bring relief, they do not cause harm."

All women identified contraceptives as 'heating,' with pills and injections particularly, considered more heating than other modern medicines:

Ayesha: "These things generate heat into one's body; one feels upset. If I take a tablet I feel uneasy and my heart pounds."

Interviewer: "What is its effect?"
Qamar: "It is hot…
Interviewer: "Are all tablets hot?"
Qamar: "Some are hotter than others."
Interviewer: "Do you think these [contraceptives] are hotter or cooler?"
Qamar: "Yes, these are hotter."

Women described the heating effect of contraceptives as resulting in, or further accentuating, irregular or excessive menstruation, weakness, and weight gain. Most said contraceptive heat resulted in excess bleeding.

Shehnaz: "I got it [IUD] *placed that's why I have more flow of menstruation; that happens with everyone."*

Several equally interpreted missed menstruation as heat damage, discussing herbal remedies to encourage the onset of delayed menstruation:

Nasreen: "Obviously, they [contraceptive injections] *are heat-generating. They may be burning the blood."*
Interviewer: "What do you mean by burning the blood as you cannot see the process?"

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

For peer review only

Nasreen: "Just what elder women say; girls take injections; the blood gets burned; there is no menstruation."

Others focused on weakness and swelling.

Pari: "If a woman is weak she shouldn't take it. I know how difficult it is for me. She won't tolerate it well. She will be so tired from taking pills. They are very hot and because they are hot they will rot your blood. You will feel unwell."

Nadira: "I was not like I am today. There is more swelling in my body. When one takes more medicines, I think it harms the body."

Interviewer: "You are saying that it is due to hot medicines?"

Nadira: "Yes it is due to heat."

Menstruation

A regular flow of menstruation was considered normal and healthy by all women. Women associated irregular bleeding with weakness, weight gain, and disease. Women associated menstrual irregularities with all three contraceptives, but those using injectables complained most:

Nasreen: "I stopped taking [contraceptive] *injections; I say that the flow of menstruation is also essential."*

Most reported menstruation as a form of cleansing. If it did not occur regularly then weight gain or serious disease could follow:

Farida Bibi: "I too fear that my periods may stop and that my abdomen starts bulging."

Nasreen: "They say that if menstruation stops it causes internal diseases. Tumours are formed, obviously, if something dirty doesn't find its way out."

Women associated both excessive and insufficient menstruation with weakness. Perspectives varied as to whether weakness caused irregular bleeding or vice versa.

Farida Bibi: "Some have excessive menses; they have it twice a month; as a result of which one gets weaker. For example, in our home there is my elder sister-in-law; it [IUD] *did not suit her. She goes through excessive menstruation, even more than before. She is getting weaker day by day."*

Talat: "When it used to come every month it was ok. Now it is every 2-3 months. Then sometimes it is scanty and sometimes it is heavy."

Interviewer: "How does that affect a woman?"

Talat: "It causes weakness. When women menstruate, then weakness is relieved."

Long-term effects

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Women's perspectives were mixed whether long-term or repeated usage of contraception was harmful. Some, who felt comfortable with their method of contraception, said that extended usage of five to ten years was harmless:

Ayesha: "What effect would it be? No, nothing..."

Interviewer: "Nothing?"

Ayesha: "It depends on you. You should take care of yourself."

Others were concerned about blood pressure, infertility, uterine damage, obesity, and 'problems with the blood'. The most common concern was temporary infertility:

Talat: "You won't get pregnant. When the effect of medicine finishes in the body, then pregnancy occurs. My niece had the injection. When she left the injection, a year or so after, when the effect of the medicine finished, she conceived."

Nasreen: "If you use something in routine you should give a gap in between…"

Interviewer: "So if I desire child spacing of five years and if I use injections continuously?"

Nasreen: "No, don't do that!"

Interviewer: "What is the risk involved in that?"

Nasreen: "The risk is that the menstruation will stop altogether."

Interviewer: "So is that risky?"

Nasreen: "Yes, that is dangerous!"

One participant stated that prolonged usage of medicines reduces efficacy:

Rashida: "Anything stops having an effect. If you continuously use a medicine its effect finishes."

Suitability

While women said all medicines are heat generating, they clarified that the extent to which heating effects were felt depended on the person's blood. People have hot or cold blood, which reacts to hot or cold foods and medicines. Hot-blooded people were described as more sensitive to heat, getting rashes and being irritable by nature:

Aziza: "Yes. It [blood] *is hot or cold, depending on the person's body makeup. We practice remedies by ourselves… for decreasing the heat of the body."*

Women discussed how contraceptives 'suit' or do not suit an individual. Many tried one method then switched to another because it did not suit them. Women understood each person to be different, and that each method had different effects on different people:

Pari: "Everyone says that the tube [IUD] *suits some people and is better, but others whom it does not suit, it causes damage."*

For peer review only

Qamar: "If it suits a woman, then they keep taking. And there are some women, like me, the [contraceptive] injection harmed me, so I left it. Like these pills now suit me, in the same way there are some women whom the injection suits. Then they keep using the injection."

Women discussed how, after some time, negative effects of medicines could wear off and suit them better.

DISCUSSION

Participants were familiar with the strengths and weaknesses of multiple therapeutic approaches, and moved easily between them depending on the nature of the problem and whether the initial approach was considered effective. Women generally preferred modern approaches as providing more powerful and rapid results - and as the only choice for fertility control - but expressed concerns about long-term effects. Concepts of medicinal potency reflected those in other studies. For example, Nichter reports that Indian villagers perceived that modern medicine offered a quick cure but eventually harmed overall health.[19]

The contraceptive as object was meaningful for women. Particularly meaningful were fear of injection pain and discomfort about IUD ~~insertion~~usage, both affecting contraceptive choices.[36 39] Despite preferring modern contraception, women used traditional medicine idioms to explain contraceptive objects and how these worked within their bodies. Women's perceptions of how contraceptives affected their health were grounded in the hot-cold explanatory idiom.[40] This idiom of the heating and cooling effects of food and medicine, combined with an individual's hot or cold blood, is found in many traditional health approaches including Chinese, North Indian, and South American.[41-46] The hot-cold concept is rooted in Hippocratic humoral medicine that spread via Arab influence.[43] Nichter describes Western medicines as heating and ayurvedic medicines as neutral, in reference to the speed and uncontrolled manner in which the former acts and perceived effect on the blood.[19]

In Pakistan, the hot-cold idiom is an essential component of *hikmat*. Although *hikmat* was not a preferred therapeutic approach for participants, this idiom was essential to their understanding of the effects of contraceptives on their bodies and why individuals reacted differently. Women reported menstrual irregularities, weight gain and weakness as the main interconnected problems caused by the heating properties of contraceptives. While no other literature from Pakistan was found relating women's perceptions of contraception to this idiom, it was overwhelmingly part of participants' vocabulary. Weakness from already heated blood could be further aggravated by the heating effects of contraceptives. Women spoke of discontinuing or changing methods because of such side effects, supporting Casterline and others' conclusion that widespread concerns about adverse health consequences act as a barrier to adoption and continued usage of contraceptives.[10 25]

Women worldwide have perceptions about menstrual bleeding and what is normal and natural. Participants perceived a regular menstrual flow as healthy. Similarly, women in Mali and South Africa equated menstruation with the womb being cleared of 'dirt,' thus allowing good health, so methods that interrupt the

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

natural menstrual pattern were considered unacceptable.[25] Participants associated menstrual irregularities (e.g. reduced or increased flow) with dangerous outcomes from bloodlessness, weight gain and disease, and related them causally to the heating effects of contraceptives. Thus, injections were often perceived as the most heating since they most often led to menstrual irregularities. Several women used nutritional and herbal remedies to counteract the side-effects of modern medicines such as contraceptives, usually the perceived heating and weakening effects.[17 18]

This exploratory study drew from the experiences of a small sample of twenty women, most of whom had experience of using some or all of the contraceptives discussed. Data saturation was not attempted due to time and security concerns. However, findings – particularly regarding the importance of the hot-cold idiom and menstrual regularity - suggest opportunities for further research.

CONCLUSIONS

Study findings support existing research on contraceptive usage. Most women wanted family planning, but were not entirely comfortable with their experiences of contraceptive use. The Pakistan government implements a nationwide Lady Health Worker Program through the Provincial Health Departments, and a Family Welfare Worker Program through the Population Welfare Departments of each province. These aim to provide PHC services including door-to-door family planning counselling and distribution to women in their homes. A better understanding of women's concerns and ~~their~~explanatory models ~~of explanation~~ could ~~serve to~~ provide more effective service delivery for family planning. Women's concerns regarding family planning side-effects and resulting health concerns could also inform research and development of contraceptives. Limitations of today's contraceptive technology ~~in itself~~ are one ~~of the~~ reasons that women are not using, or are uncomfortable with using, family planning methods. Thus, f~~F~~indings provide explanatory models from women themselves that could, with further research, inform health messages and family planning counselling, strengthening programmes in Karachi and potentially elsewhere in Pakistan.

ACKNOWLEDGMENTS

Authors thank the women from Shah Faisal Colony who shared their perspectives and experiences. Thanks to the RLCC health team for their facilitation and support.

CONTRIBUTORS

Both authors contributed substantially to study design and data interpretation. KM conceived of the study, collected data, and drafted the article, with critical input and revision by NH. Both authors approved the final version before publication.

FUNDING

Author salaries and costs were provided by their respective institutions. No additional funding was sought.

ETHICAL APPROVAL

For peer review only

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

The study was approved by the ethics committee of the London School of Hygiene & Tropical Medicine (LSHTM) in the United Kingdom and the Institutional Review Board of Interactive Research and Development in Pakistan.

COMPETING INTERESTS

None.

REFERENCES

1. NIPS. Pakistan Demographic and Health Survey 2006-2007. Islamabad: National Institute of Population Studies, 2007.
2. PCO. Estimated population of Pakistan. Secondary Estimated population of Pakistan 2011.
3. World Bank. Data on annual population growth (%) http://data.worldbank.org/indicator/SP.POP.GROW (accessed Dec 2012), 2011.
4. Zafar MI. Husband-wife roles as a correlate of contraceptive and fertility behaviour. Pakistan development review 1996;**35**(2):145-70
5. Mahmood N, Ringheim K. Factors affecting contraceptive use in Pakistan. Pakistan development review 1996;**35**(1):1-22
6. Nasir JA, Hinde A. Factors associated with contraceptive approval among religious leaders in Pakistan. Journal of biosocial science 2011;**43**(5):587-96 doi: 10.1017/S0021932011000216[published Online First: Epub Date]|.
7. Saleem A, Pasha GR. Women's reproductive autonomy and barriers to contraceptive use in Pakistan. The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception 2008;**13**(1):83-9 doi: 10.1080/01443610701577107[published Online First: Epub Date]|.
8. GoP. Development Amidst Crisis, Pakistan Millennium Development Goals Report Islamabad: Centre for Poverty Reduction and Social Policy Development, Planning Commission, 2010.
9. Fikree FF, Saleem S, Sami N. A quality of care issue: appropriate use and efficacy knowledge of five contraceptive methods: views of men and women living in low socioeconomic settlements of Karachi, Pakistan. JPMA. The Journal of the Pakistan Medical Association 2005;**55**(9):363-8
10. Casterline JB, Sathar ZA, ul Haque M. Obstacles to contraceptive use in Pakistan: a study in Punjab. Studies in family planning 2001;**32**(2):95-110
11. Javaid U. Corruption and its Deep Impact on Good Governance in Pakistan. Pakistan Economic and Social Review 2010;**48**(1 (Summer)):123-34
12. Zafar MI, Ford N, Ankomah A. Significance of beliefs and values in predicting fertility and contraceptive behaviour in Pakistan. Journal of biosocial science 1995;**27**(3):301-18
13. Jafarey SN. Maternal mortality in Pakistan--compilation of available data. JPMA. The Journal of the Pakistan Medical Association 2002;**52**(12):539-44
14. Hamid S, Stephenson R. Provider and health facility influences on contraceptive adoption in urban Pakistan. International family planning perspectives 2006;**32**(2):71-8 doi: 10.1363/ifpp.32.071.06[published Online First: Epub Date]|.
15. Shaikh B. Unmet need for family planning in Pakistan – PDHS 2006–2007: it's time to re-examine déjà vu. Open Access Journal of Contraception 2010;**1**:113-18
16. Carton TW, Agha S. Changes in contraceptive use and method mix in Pakistan: 1990-91 to 2006-07. Health policy and planning 2011 doi: 10.1093/heapol/czr022[published Online First: Epub Date]|.
17. Shaikh SH, Malik F, James H, Abdul H. Trends in the use of complementary and alternative medicine in Pakistan: a population-based survey. J Altern Complement Med 2009;**15**(5):545-50 doi: 10.1089/acm.2008.0232[published Online First: Epub Date]|.
18. Shaikh BT, Hatcher J. Complementary and Alternative Medicine in Pakistan: Prospects and Limitations. Evidence-based complementary and alternative medicine : eCAM 2005;**2**(2):139-42 doi: 10.1093/ecam/neh088[published Online First: Epub Date]|.
19. Nichter M. The layperson's perception of medicine as perspective into the utilization of multiple therapy systems in the Indian context. Social science & medicine. Medical anthropology 1980;**14B**(4):225-33
20. Kleinman A. *Patients and healers in the context of culture: An Exploration of the Borderland Between Anthropology, Medicine, and Psychiatry*: University of California Press, 1980.

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

21. Kleinman A. *The Illness Narratives: Suffering, Healing, & The Human Condition*: Basic Books, 1988.
22. Tolley E, Loza S, Kafafi L, Cummings S. The impact of menstrual side effects on contraceptive discontinuation: findings from a longitudinal study in Cairo, Egypt. International family planning perspectives 2005;**31**(1):15-23 doi: 10.1363/ifpp.31.15.05[published Online First: Epub Date]|.
23. Godfrey EM, Chin NP, Fielding SL, Fiscella K, Dozier A. Contraceptive methods and use by women aged 35 and over: A qualitative study of perspectives. BMC women's health 2011;**11**:5 doi: 10.1186/1472-6874-11-5[published Online First: Epub Date]|.
24. Sultana A, Qazilbash A. Factors associated with failure of family planning methods in Pakistan: Burhan village case study. Working Paper Series #91. Islamabad: Sustainable Development Policy Institute, 2004.
25. Williamson LM, Parkes A, Wight D, Petticrew M, Hart GJ. Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. Reproductive health 2009;**6**:3 doi: 10.1186/1742-4755-6-3[published Online First: Epub Date]|.
26. Zafar M, Habib-Ullah M, Rehman S, Abbasi S. Fertility regulating behaviour: a study of rural Punjab – Pakistan. Pakistan Journal of Applied Sciences 2003;**3**(6):376-84
27. Bhatti MH. Correlates of choice of contraceptive methods in Pakistan. Pakistan development review 1995;**34**(4 Pt. III):889-98
28. Rajasekar D, Bigrigg A. Pill knowledge amongst oral contraceptive users in family planning clinics in Scotland: facts, myths and fantasies. The European journal of contraception & reproductive health care : the official journal of the European Society of Contraception 2000;**5**(1):85-90
29. Aleem N. Myths and misconceptions about contraceptive methods: An exploratory qualitative study amongst married youth of Karachi. Aga Khan University, 2010.
30. Ali S, Sophie R, Imam AM, et al. Knowledge, perceptions and myths regarding infertility among selected adult population in Pakistan: a cross-sectional study. BMC public health 2011;**11**:760 doi: 10.1186/1471-2458-11-760[published Online First: Epub Date]|.
31. Harcourt W. Sex, lies and population: a view from the north? . Working Paper Series #3. Islamabad: Sustainable Development Policy Institute, 1992.
32. Spiers J. New perspectives on vulnerability using emic and etic approaches. Journal of advanced nursing 2000;**31**(3):715-21
33. Scherer RF, Owen CL, Petrick JA, Brodzinski JD, Goyer KA. Initial development of an emic methodology for classification of stressful work situations. Perceptual and motor skills 1991;**73**(3 Pt 1):1004-6
34. Tripp-Reimer T. Reconceptualizing the construct of health: integrating emic and etic perspectives. Research in nursing & health 1984;**7**(2):101-9
35. Karachi City Government. Shah Faisal Town (http://www.karachicity.gov.pk/). accessed September 2012: City District Government Karachi, 2011.
36. Higgins JA, Hirsch JS. Pleasure, power, and inequality: incorporating sexuality into research on contraceptive use. American journal of public health 2008;**98**(10):1803-13 doi: 10.2105/AJPH.2007.115790[published Online First: Epub Date]|.
37. Smith C. Content Analysis and Narrative Analysis. In: Reis H, Judd C, eds. Handbook of Research Methods in Social and Personality Psychology: Cambridge University Press, 2000.
38. Kamran I, Arif MS, Vassos K. Concordance and discordance of couples living in a rural Pakistani village: perspectives on contraception and abortion--a qualitative study. Global public health 2011;**6 Suppl 1**:S38-51 doi: 10.1080/17441692.2011.590814[published Online First: Epub Date]|.
39. Kaneshiro B, Aeby T. Long-term safety, efficacy, and patient acceptability of the intrauterine Copper T-380A contraceptive device. International journal of women's health 2010;**2**:211-20
40. Pool R. Hot and cold as an explanatory model: the example of Bharuch district in Gujarat, India. Social science & medicine 1987;**25**(4):389-99
41. Barrett RJ, Lucas RH. Hot and cold in transformation: is Iban medicine humoral? Social science & medicine 1994;**38**(2):383-93
42. Harwood A. The hot-cold theory of disease. Implications for treatment of Puerto Rican patients. JAMA : the journal of the American Medical Association 1971;**216**(7):1153-8
43. Hartog J, Hartog EA. Cultural aspects of health and illness behavior in hospitals. The Western journal of medicine 1983;**139**(6):910-6
44. Hilgert NI, Gil GE. Reproductive medicine in northwest Argentina: traditional and institutional systems. Journal of ethnobiology and ethnomedicine 2007;**3**:19 doi: 10.1186/1746-4269-3-19[published Online First: Epub Date]|.
45. Singh A. Place of menstruation in the reproductive lives of women of rural North India. Indian Journal of Community Medicine 2006;**31**:10-14

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

46. Marcos S. Hot and cold classification in traditional Iguape medicine. Ethnology 1984;**23**(1):63-72

For peer review only

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

FIGURES

Figure 1 Map of Pakistan

Source: http://jagonews.com/wp-content/uploads/2010/02/Karachi-map.gif (accessed 20 April 2013)

Figure 2 Schematic map of Karachi showing the location of Shah Faisal Colony

Source: Karachi City Government: http://en.wikipedia.org/wiki/File:ShahFaisalTown_Karachi.PNG (accessed 20 April 2013)

For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

COREQ Checklist[1] **for Marvi and Howard**

Nb.	**Item**	**Responses**
	Domain 1:	***Research team and reflexivity***
	Personal characteristics	
1	Interviewer	The first author conducted all interviews.
2	Credentials	At the time of this study, the first author was an experienced NGO manager, completing an MSc in Public Health. The second author was an early-career academic, completing a doctorate in public health.
3	Occupation	The first author was country manager of a health leadership training NGO. The second author was a lecturer in global health policy.
4	Gender	Both authors were female.
5	Experience/Training	Both authors had received masters-level training in qualitative study design, data collection, and analysis methods prior to the start of research. The second author had experience of conducting qualitative research.
	Relationship with participants	
6	Relationship established	The authors had no prior relationship with participants.
7	Participant knowledge of interviewer	Participants were informed about the interviewer's professional background, that she was conducting research as part of an MSc project and would seek to publish findings, and were given the opportunity to ask questions.
8	Interviewer characteristics	The interviewer was an experienced health professional, particularly interested in the research topic to help improve understanding of women's perspectives among reproductive health leadership trainees.
	Domain 2:	***Study design***
	Theoretical framework	
9	Methodological orientation and theory	Content analysis
	Participant selection	
10	Sampling	Participants were selected purposively to provide a range of contraceptive users and non-users.
11	Method of approach	Participants were approached face-to-face.
12	Sample size	20 participants.
13	Non-participation	All women selected participated. Two pilot interviews were excluded. One interview was excluded and replaced, as it had not been recorded.
	Setting	
14	Data collection setting	Data was collected in a private meeting room at a local clinic.
15	Presence of non-participants	Non-participants were not present during interviews.
16	Description of sample	Participants were women living in a low-income district of Karachi, within the RLCC catchment.
	Data collection	
17	Interview guide	An interview guide was developed and piloted.
18	Repeat interviews	Repeat interviews were not conducted.
19	Audio/Visual recording	Digital audio recording used.
20	Field notes	Field notes were made during or immediately after each interview.
21	Duration	Interviews lasted an average of 60 minutes.
22	Data saturation	Data saturation was discussed.
23	Transcripts returned	Transcripts were returned where possible to confirm accuracy.
	Domain 3:	***Data analysis and findings***
	Data analysis	
24	Number of data coders	Both authors were involved in coding.
25	Description of coding tree	Coding was non-hierarchical.
26	Derivation of themes	Themes were derived from the data.
27	Software	Software was not used.
28	Participant checking	It was not possible to contact participants for their feedback on analysis.
	Reporting	

For peer review only

29	Quotations presented	Quotations were presented, identified by pseudonym.
30	Data and findings consistent	Data and findings presented were consistent.
31	Clarity of major themes	Major themes were presented in findings.
32	Clarity of minor themes	Diverse cases and minor themes were discussed.

1. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International journal for quality in health care : journal of the International Society for Quality in Health Care / ISQua 2007;**19**(6):349-57 doi: 10.1093/intqhc/mzm042[published Online First: Epub Date]|.

For peer review only