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Learned authors and valuable readers

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Editor

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CONTENTS

GUEST EDITORIAL
Islam and Health Care 57
Abdul Rashid Ch., M. A. Soofi And Syed Sakhawat Ali

Family Planning Knowledge and Practice (A Study in Rural Community of Punjab, Pakistan) 59
Naheed Humayun Sheikh, Shahid Mahmud, Shazia Hassan
Fayyaz Ahmad Qureshi And Tariq Humayun Sheikh

Implementing Reproductive and Child Health Priority Agenda in Punjab 67
Maqsood Ahmad, Shaheena Ayaz

Association of Chronic HBV and HDV Infection with Chronic Liver Disease. A Case Control Study 71
Capt. Ijaz Ahmed Bukhari, Mrs. Anjum Mirza, Samina Badar

Role of Fine Needle Aspiration Biopsy in the Diagnosis of Breast Lumps 74
Muhammad Latif Aftab and Asma Rashid

Leadership Issues: Outlook and Perception in An Organisation Comprising Two Different Teams 79
Khalid Ismail

Chloroquin Efficacy Against Plasmodium Falciparum, in Punjab Pakistan 84
Muhammad Saleem Rana, Syed Sakhawat Ali
Akhtar Tanveer, Ehsanullah Tarin

Dietary Habits and Dental Caries Experience in Adult Population of Village Maghian, District Attock 87
Shamta Sufia, Khalid Latif Malik

Analysis of Serum IgE Levels in Patients with Allergic and Vasomotor Rhinitis 91
Muhammad Tayyab, Pervaiz Azam Malik
Muhammad Saeed Anwar, Nasir Ahmad Chaudrhy

Shigella Carriers Among Food Handlers 94
Liaqat Ali Chaudrhy, Raheela Hussain
Nasir Ahmad Chaudrhy, M. Tayyab

Prevalence of Viral Hepatitis B Surface Antigen (HBsAg) Among the General Population 98
Capt. Ijaz Ahmed Bukhari, Samina Badar
Hafiz Muhammad Dawood

Epithelial Changes in Tracheobronchial tree of Cigarette Smokers: An Autopsy Study 101
Syed Shoaib Shah, Saeed Akhtar Khan
Muhammad Tayyab, Naseer Ahmad Chaudrhy, Raheela Hussain

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GUEST EDITORIAL

ISLAM AND HEALTH CARE

ABDUL RASHID CH., M. A. SOOFI AND SYED SAKHAWAT ALI
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There are, in the annals of history, events, and problems, solutions which appeared extraordinary, and which have been solved and explained by Social Welfare Law of Islam and its evaluation. The outburst of principle of Islam has conquered the ancient world in the matter of public health problems. Islam emerged from normal condition and has become prestige of not the common man but of all great powers.

Islam has victorious record in every conquest and battle. Similarly it has got historical triumph in matters pertaining to understanding and explanation of health issues. There are many positive factors regarding the factual position of Islam in maintenance of Health and human welfare. Haj etc., at that extent as practised by Muhammad (PBUH) messenger of God in his life. The judicious policy and health policy was, one of the most important factors in the extension of Islam practised by Muhammad (PBUH) and Loyal of Islam in a befitting way. From this versatile portrait of Muhammad (PBUH) which history presents to us, the advent of Islam and practice of principles of health and simplicity in the society of Muhammad with all its shades of zeal, vigor and moral purity we learn of the many factors of the triumph of Islam.

The genius of Prophet Muhammad (PBUH) the Spirit of his religion, leading humanity to the right path is a memorable revolution in human history, which has impressed a lasting character on the nations of the globe and there is no comparison of the great Muhammad (PBUH) in his character and in his preservation of his purity of thoughts in his childhood. He was undoubtedly devoid of corrupt ideas and possessed the highest morals with a generous nature as prescribed in the following methods to call at patients mentioned in Alhadish Ahmad, Tirmizi and Mishkat that in every trouble or disease of a Muslim the Prophet Said "one should go peacefully to the ailing brother and inquire after his health and welfare" this was his character whenever he visited some one and asked Allah for his healing and recovery. He showed sympathy to the sufferer. There are many Hadith in which the Holy Prophet asks for recovery for the ailing person "Hazarat Abdullah Bin Abbas narrates that Prophet said "Whosoever visits the ailing person, he should recite these words". اسال اللہ العظیم رب العرش العظیم ○

several time. I beg to greater God of all the skies for recovery of this ailing person. Similarly Hazarat Aisha Siddiqua wife of the holy Prophet narrates that whenever the holy prophet looked into an ailing member of the family, he use to quote the following verses:

اذھب الباس رب الناس واشف انت الشافی الا شفآء
شفآءلہ لنادرسقاء ○

Oh God of people, "remove the suffering and disease of this person, because thou art the only one, who is the Healer, none else, but thou are the healer, and give him complete recovery, which should not be repeated". By saying this the prophet exhorted the sovereignty of the God Almighty. And this policy of Muhammad (PBUH), may clearly be traced to the condition of illness and instruction for health in many chapters.

Such were the factors that paved the way of Islam and thus Islam has come victorious and universal religion. Islam is not confined to one discipline, and it is not hostile to any one but its doctrines are so glorious that it had a victory over the previous chapter of religions.

Islam believes in cleanliness الطہارت شطر الایمان

The cleanliness is half of the Faith and Quran says: ان اللہ یحب المطہرین ○ قرآن

"preserve the cleanliness in your body and clothes". This phenonena is the first striking

mystery of the religion of Islam, which was not imposed on human body forcefully but as a doctrine of Islamic Principle and conscience was employed to purify the soul and body, keeping it away from the clutches of disease. Because the new religion accepted by non-muslims needs a heal their society and thus the prophet himself imposed such restrictions of cleanliness on himself to be adopted by his followers. Embrassment to Islam has occurred after the practical life and complete institution in the life of Prophet Muhammad (PBUH) and his practical behaviour paved and penetrated into the souls of the Muslims and they had celebrated their new life with tolerance in sympathies of the people and society. Thus the secret of spread of Islam is also the rapidly spreading concept of cleanliness of soul and mind and body with a conscious effort help to the others. Believing in the Creator for His Sovereignty.

The philosophy of religion and prayer is considered, Sovereignty of God, and propheted and belief in day of judgement, in Holy books, and in all the Prophets etc. This concept is not based upon material interest but it is spiritual in nature which encourages the policy of well being of others with self cleanliness. The abolution (وضو) is the first restriction imposed on a Muslim who presented himself for prayers. However no prayer, how great it may be is preferred without proper enjoyment of abolution (وضو) then only blessing of Lord can be achieved if religious persons wants to preserve by the code of health. The abolution (وضو) provides removal of the bacteria, refreshment to the peripheral parts of the body and refreshment happen. No body can offer the prayers with unclean clothes and unclean place. With this amount of exercise and tradition, there is a source of compulsory cleanliness of mouth and teeth and Prophet Muhammad (PBUH) has lot of limitation and saying about the importance of teeth and their cleanliness.

The levy of the taxes (ZAKAT) and method of their payment is again self imposed discipline to help the ailing and one suffering, by giving Corn, Oil, Clothes from Zakat to ailing brothers is a great maintenance of a discipline. Fasting is also helpful in keeping the health in order, for me God has sent Muhammad (PBUH) to instruct the human being to be enlightened with the sense of cleanliness and protection of health.

This peaceful policy has helped in the Spread of Islam with overwhelming rapidity which was not confronted by the human behaviour and circumstances. The health of the wounded soldiers during the invasion of Jewish or any other enemy has become the symbol of the character of Muslim civilization.

The method of visiting the sick brother Abu Dawood narrates that the Prophet advised these versus in case of illness.

ربنا الله الذی فی السمآء لقدس اسمک آمرک فی السمآء والارض کما رحمتک فی السمآء فاجعل رحمتک فی الارض اهرلانا حوبناء خطایانا انت رب المبین انزل رحمته من رحمتک و شفاء ○

Our God is that, who governs the skies, His name is pure. He is master of Heaven and Earth and His blessing is everwhere on the earth and on every where the sky. He forgives our sins because He is a Lord of clean people and commonly recover from the disease this person and if this is done the recovery of the ailing person was sure by the God Almighty Allah. So in Islam there is humanity and discipline of Health. Practicing such discipline the Muslim can keep healthy life which is valuable to the Society and this is merit of Islam in supremacy of other religion, because the main object is to remain healthy for practice of discipline of Islam and for any other expendition for protection of its sovereignty. For defensive purposes healthy society / environment in battle is needed in Islam.

* To clean the teeth with Miswak on Friday. And Abu Saed, Said that the Prophet (PBUH) used to clean his teeth.
* Narrated Abu Huraira Allah's Apostle (PBUH) said, If I had not found it hard for my followers or the people, I would have ordered them to clean their teeth with Miswak for every prayer.

FAMILY PLANNING KNOWLEDGE AND PRACTICE
(A Study in Rural Community of Punjab, Pakistan)

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Summary

A cross-sectional survey was conducted in a village of District Okara, Punjab, Pakistan. 115 married women of child bearing age (15-49 were interviewed to get information about knowledge and practices of family planning. 93 (80.83%) women were illiterate and 22 (19.1%) were literate. There was no marked difference in fertility rate between these two groups (Fertility rate was 5 per woman). Most of these women belonged to poor families. 111 (96.52%) females had the knowledge about family planning but only 40 (36.03%) ever practiced it. Among literate women 12(57%) were practicing family planning while 9 (42.85%) did not practice. 28 (31.11%) illiterate had practiced it, while 62 (68.88%) never practiced it (P = < .05, chi-square is highly significant). Study shows that there is a big gap between knowledge and practices. 71 (63.9%) never practiced it, out of which 45 (63.38%) did not practice family planning due to the fear of all mighty ALLAH. 15 (21.12%) never practiced because their spouse never liked it. 11 (15.49%) were not motivated. Among literate non-users 8 women (88.88%) out of 9 did not practice family planning due to fear of ALLAH, while 37 (59.67%) out of 62 non-practicing illiterate did not practice due to the same reason. Statistically it was proved that there is no difference between two strata. The study concluded that the main reason among literate and illiterate females is the fear of ALLAH (p = <.05, chi-square is insignificant, O.R = 5.41)

Introduction

Pakistan is a developing country. The rapid growth of its population is a major concern affecting its socio-economic development. Each family has around 6 children. To slow down the population growth, couples of reproductive age, in the entire world need access to reliable and affordable contraceptives by the year 2000. Universal access to family planning and strong public support for small families could increase the world-wide contraceptive use, but in-spite of spending a lot of money we are unable to achieve our targets. Customs and religions may be the big hindrance. The number of couples of reproductive age in developing countries will grow to 18 million a year[1]. Pakistan has had an official population program was since 1965, which intended to bring about fertility decline. However until 1985 only 9% of married women were reported to be currently using any contraception[2]. According to National Institute of Population Studies, in Pakistan only 12% couples wanted to post-pone the next pregnancy for at least a year, and they were actually practicing contraception. In this survey men were interviewed, 75-79% have got information, 52-65% have knowledge, 1-12% utilize it. Contraception utilization rate changed from 5.5%-14% in Pakistan[3]. This increase was observed during 1975-91. In comparison to this, the trends have changed from 33.6% to 57% during 1989-91 in Dhaka, Bangladesh. Blinkoff in 1991 conducted an Anthropological study in Pakistan that showed how women's desire to regulate fertility is weighed against the opposition of their husbands, the fear of side effects, preference for a specific number of sons and daughters, inaccessibility of family planning services, fear of child mortality and religious ideas. The gap between idea of small family size and the actual reproductive behaviour should be abridged4. The introduction of Family

Planning component in health infrastructure will cost Rupees 63.8 million in Punjab, Rs. 21.2 million in Sind, Rs. 15.8 million in N.W.F.P., Rs. 5.4 million in Baluchistan and Rs. 0.5 million in A.J.K. These allocations cover training requirements, Contraceptives, I.E.C. materials, Commodities, monitoring and evaluation[5].

Concept of Family Planning in Islam

Family planning is a topic of great concern for those who fully believe in the Qur'an and Sunnah. Being Muslim of an Islamic state we are duty bound to analyze family planning in the light of Qur'an & Sunnah. No attention has been paid towards this aspect of the issue, as it amounts to disobedience of orders of ALLAH(Jalla Shano Hoo) and sayings of Prophet(PBUH). The picture painted by the planners and propaganda machinery is against the Islamic teachings. Unfortunately all our knowledge and source of information about family planning is against the injunctions of Qur'an and Hadiths. ALLAH(Jalla Shano Hoo) in The Qur'an has stated,

وَأَنكِحُوا الْأَيَامَىٰ مِنكُمْ وَالصَّالِحِينَ مِنْ عِبَادِكُمْ وَإِمَائِكُمْ ۚ
إِن يَكُونُوا فُقَرَاءَ يُغْنِهِمُ اللَّهُ مِن فَضْلِهِ ۗ وَاللَّهُ وَاسِعٌ عَلِيمٌ ﴿٣٢﴾

"[And marry those among you who are single and (also marry) the pious of your slaves and maid-servants (female servants). If they be poor, ALLAH(Jalla Shano Hoo) will enrich them out of His Bounty. And ALLAH(Jalla Shano Hoo) is All-Sufficient for His creature's needs, All-Knowing (about the state of the people][6]. Prophet Muhammad (PBUH) advised his companions (*Sahaba Ikrams*Razi ALLAH-o-Unhum), *"Marry those women who can give birth to many children, because, on the Day of Judgment I shall be proud of the size of my Ummah (followers)"*[7].

ALLAH the All-Provider

To have fewer children because of fear of economic / financial problems is baseless. ALLAH (Jalla Shano Hoo) in Nobel Qur'an says, " وَمَا مِن دَابَّةٍ فِي الْأَرْضِ إِلَّا عَلَى اللَّهِ رِزْقُهَا وَيَعْلَمُ مُسْتَقَرَّهَا وَمُسْتَوْدَعَهَا ۚ كُلٌّ فِي كِتَابٍ مُّبِينٍ ﴿٦﴾ " *[And no moving (living) creature is there on earth but its provision is due from ALLAH. And He know its dwelling places and its deposits (in uterus, grave etc.). All is in a Clear Book (Al-Lauh-Al-Mahfuz--the Book of Decrees with ALLAH (Jalla Shano Hoo)] 8. ALLAH*(Jalla Shano Hoo) emphasized in surah Al-Ankaboot, " وَكَأَيِّن مِّن دَابَّةٍ لَّا تَحْمِلُ رِزْقَهَا ۖ اللَّهُ يَرْزُقُهَا وَإِيَّاكُمْ ۖ وَهُوَ السَّمِيعُ الْعَلِيمُ ﴿٦٠﴾ " *[And so many a moving creature (living) there is, that carries not its own provision! ALLAH provides for it and for you. And He is the All-Hearer, the All-Knower]*[9].

This act of illiteracy, which is presently being named as family planning came from, so called developed nations because of their social set up and sex-free society. When these nations observed that the population of the third world countries especially Muslim world is on the rise and that of developed countries declining they introduced this family planning / population planning in these countries by their propaganda as well as lot of financial assistance through NGO"S (In the name of better future and better prospect of the family as well as the country). Where as ALLAH(Jalla Shano Hoo) has said, "

إِنَّ رَبَّكَ يَبْسُطُ الرِّزْقَ لِمَن يَشَاءُ وَيَقْدِرُ ۚ إِنَّهُ كَانَ بِعِبَادِهِ خَبِيرًا بَصِيرًا ﴿٣٠﴾
وَلَا تَقْتُلُوا أَوْلَادَكُمْ خَشْيَةَ إِمْلَاقٍ ۖ نَّحْنُ نَرْزُقُهُمْ وَإِيَّاكُمْ ۚ إِنَّ قَتْلَهُمْ كَانَ خِطْئًا كَبِيرًا ﴿٣١﴾

"[Truly your Lord enlarge the provision for whom He will and straiten (for whom He wills). Verily He is Ever All-Knower, All-Seer of His slaves. And kill not your children for fear of poverty. We provide for them and for you. Surely, the killing of them is great sin"[10].

In the Hadith Books there is a chapter about Coitus interruptus (Uzel). Prophet MuhammadPBUH although never imposed any restriction on doing it but he discouraged it. When enquired from Prophet MuhammadPBUH, he asked, *"Do you really do it?"* repeating the question thrice and than said, *"There is no soul that is destined to exist but will come into existence, till the Day of Resurrection"*[11].

Material and methods

A cross-sectional survey was conducted in a village near Okara, Pakistan. 115 families residing in that village were interviewed to find out the knowledge and practices in family planning. The questionnaire was filled by the trained team of students of Department of Social Work, University of the Punjab. The results are analyzed by the use of computer.

Aims and Objectives

1. To find out, the level of knowledge and extent of practices of family planning.
2. To find out, the reasons for non-using it.
3. To find out, the impact of education on family planning practices.

4. To find out, ways and means of family planning which are against the injunctions of Islam.

Results

Total numbers of families = 115
Literacy rate of females = 19.13 %
Literacy rate of males = 51.30 %
Total number of live births = 543
Still births = 24
Abortions = 54
Pregnancy rate = 5 / women
Type of families:
Extended = 42
Nuclear = 73

Table 1: *Educational status of Females*

S. No.	Educational Status	No. of Respondents
1.	Illiterate	93 (80.87%)
2.	Undermatric	19 (16.52)
3.	Matric	2 (1.74)
4.	Post-matric	1 (0.87)
	Total	115

Table 2: *Educational Status of Husbands*

S. No.	Educational Status	No. of Respondents
1.	Illiterate	56 (48.70%)
2.	Undermatric	43 (37.39%)
3.	Matric	13 (11.30)
4.	Post-matric	3 (2.61)
	Total	115

Table 3: *Women having knowledge about family planning. Percentage distribution of women having knowledge about different types of family planning methods.*

No.	Knowledge	No. of Women
1.	Yes	111 (96.52)
2.	No	4 (3.48)
	Total	115

Table 4: *Sources information attained about family planning by Women of reproductive-age-group.*

No.	Sources of information	No. of women
1.	Television	30 (27.02%)
2.	Television and other sources	55 (49.54%)
3.	Radio	02 (1.80%)
4.	Relatives and friends.	11 (9.90%)
5.	Husband.	06 (5.40%)
6.	Newspaper.	00 (0%)
7.	Family planning center.	01 (0.60%)
8.	Doctor.	00 (0%)
9.	Lady health visitor.	06 (5.40%)
	Total	111

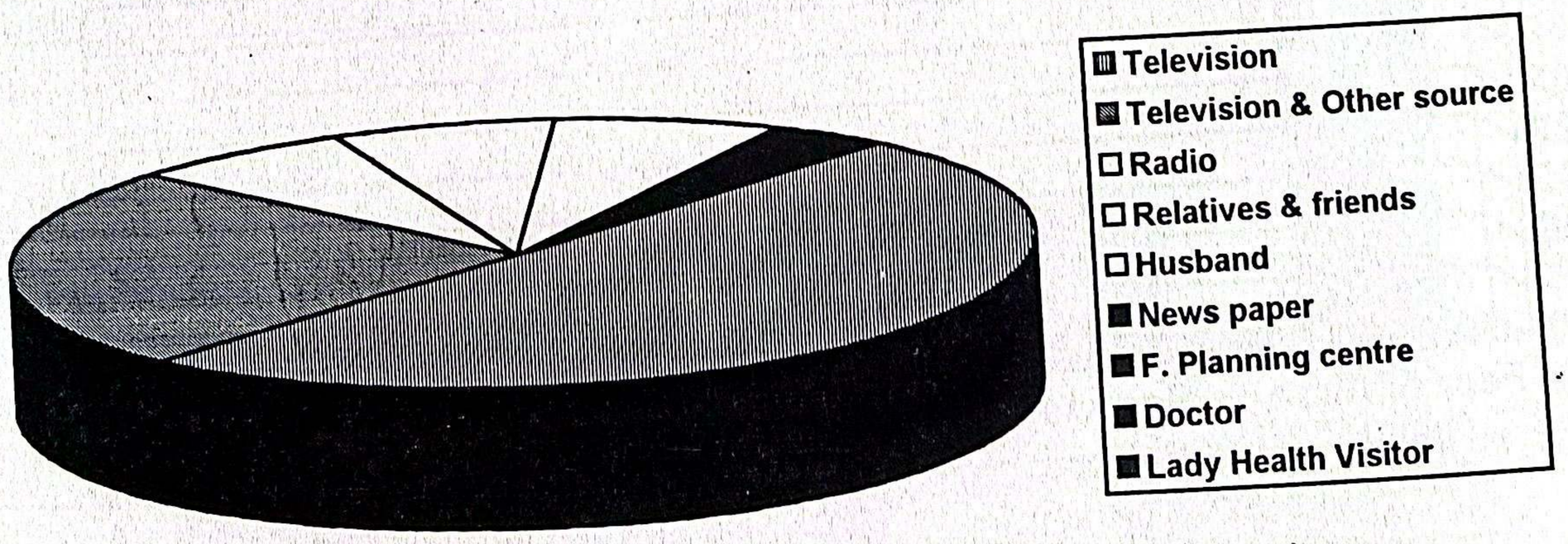


Fig. 1: Different sources from where Women of reproductive age group attained information about family planning.

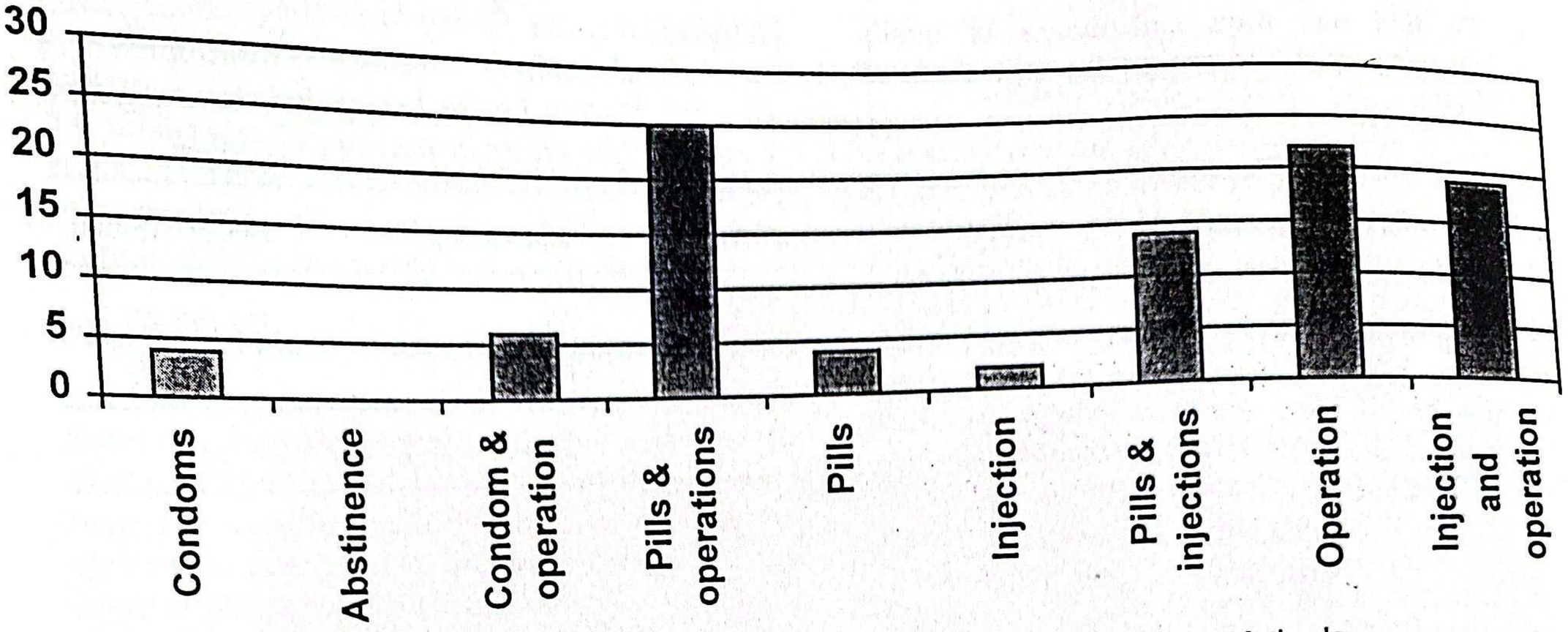


Fig. 2: Females having knowledge about different Family Planning Methods

Table 5: *Females having Knowledge about different types of Family Planning Methods.*

S. No.	Methods	No. of Respondents
1.	Condom	04 (4.16%)
2.	Abstinence	00 (00%)
3.	Condom and operation	06 (6.25%)
4.	Pills and operation	25 (26.04%)
5.	Pills	04 (4.16%)
6.	Injection	02 (2.08%)
7.	Pills and injection	14 (14.58%)
8.	Operation	22 (22.91%)
9.	Injection and operation	19 (19.79%)
	Total	111 (100.00%)

Table 6: *Distribution of Females ever Practiced Family Planning*

S. No.	Practiced Family Planning	No. of Respondents
1.	Yes	40 (36.04%)
2.	No.	71 (63.96%)
	Total	111 (100.00%)

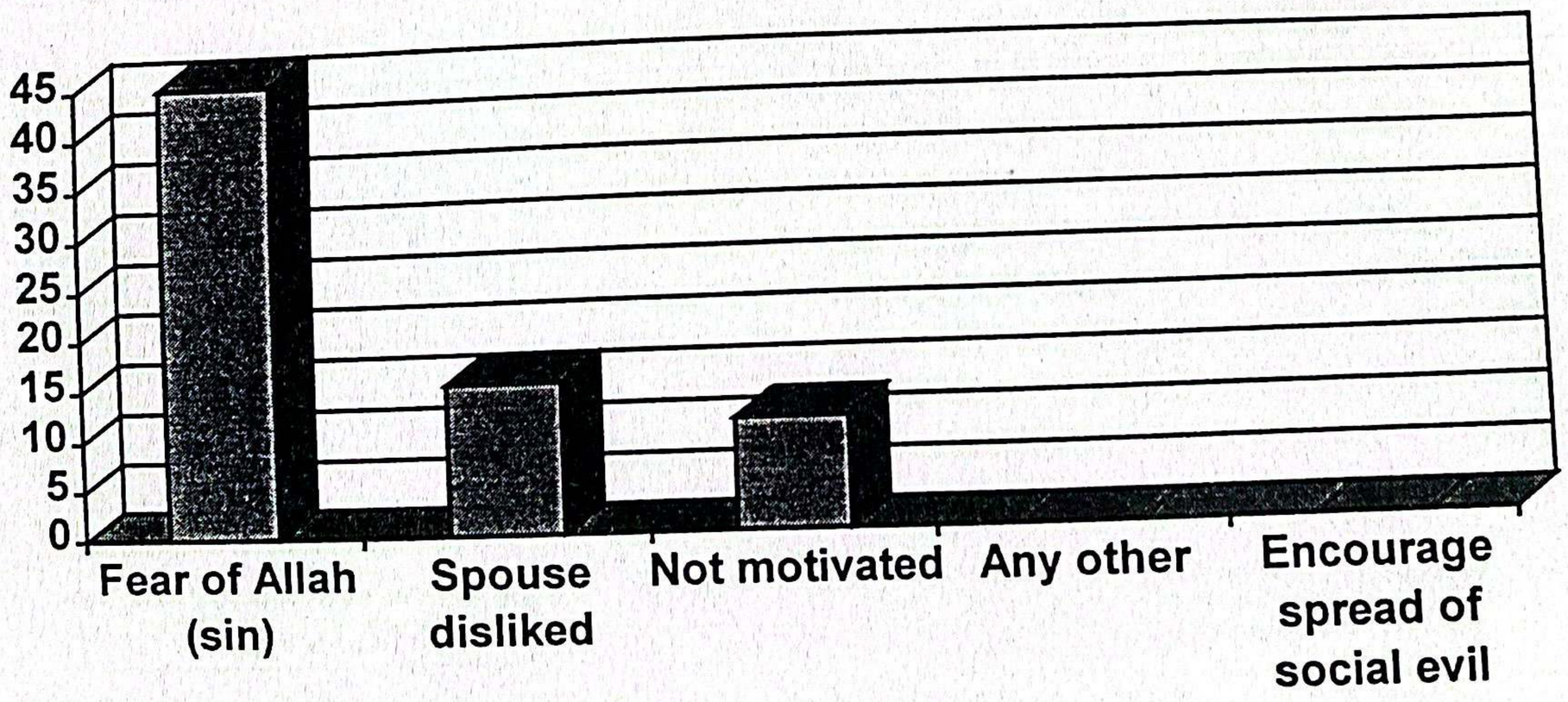


Fig. 3: Reasons for not practicing Family Planning

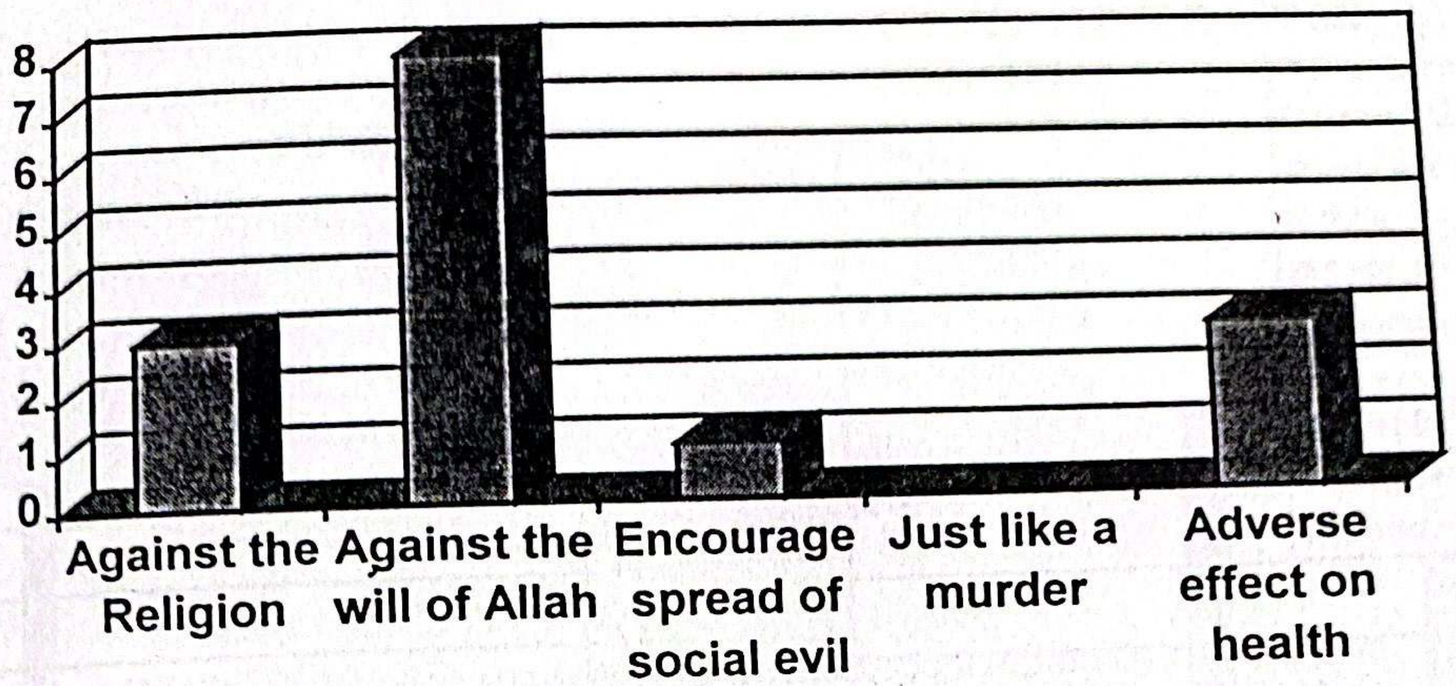


Fig. 4: Masculine spouses were against Family Planning for the reasons.

Table 7: *Reasons for not practicing Family Planning*

S. No.	Reasons	Respondents
1.	Fear of Allah. It is a sin	45 (63.38%)
2.	Spouse disliked	15 (21.12%)
3.	Not motivated	11 (15.49%)
4.	Any other	00
5.	Encourage spread of social evil	00
	Total	71

Table 8: *Masculine spouses were against Family Planning for the various reasons.*

No.	Reasons for being against	No. of Respondents
1.	Against the religious teachings	3 (20.00%)
2.	Against the will of Allah	8 (53.33%)
3.	Encourage spread of the evil	1 (6.67%)
4.	Just like a murder	0 (00.00%)
5.	It has adverse effect on health.	3 (20.00%)
6.	Any other	0 (00.00%)
	Total	15

Table 9: *After how many children family planning practice started for the first time.*

S. No.	No. of children after which Family Planning was Practiced	No. of Respondents
1.	1	04 (9.30%)
2.	2	06 (13.93%)
3.	3	06 (13.93%)
4.	4	04 (9.30%)
5.	5	04 (9.30%)
6.	6	08 (18.60%)
7.	7	04 (9.30%)
8.	8	01 (2.32%)
9.	9	02 (4.65%)
10.	10	01 (2.32%)
	Total	40

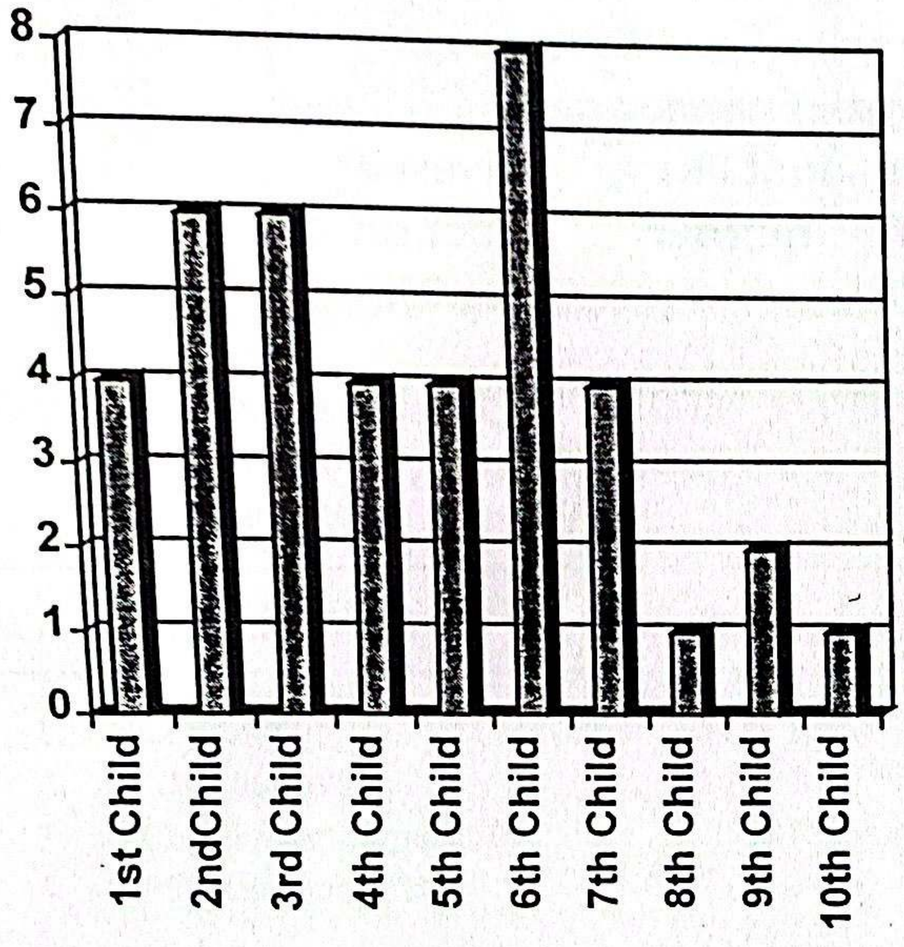


Fig. 5: After how many children family planning practice started for the first time.

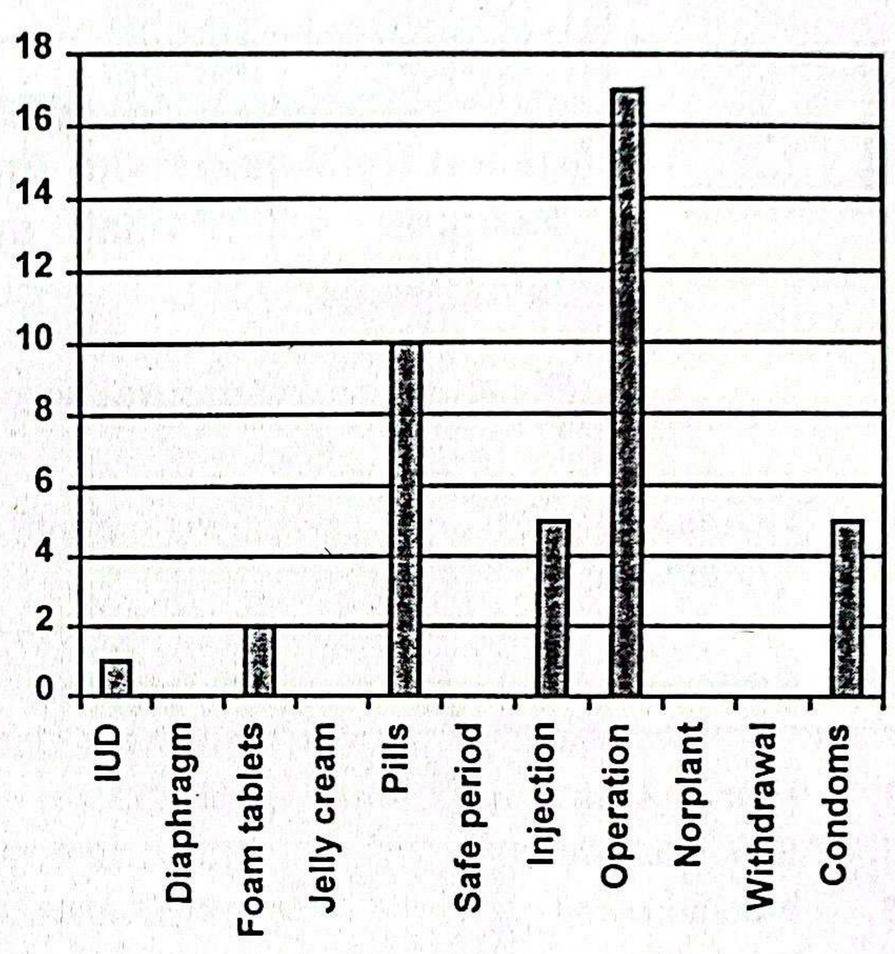


Fig. 7: Distribution showing different methods adopted by respondents.

Table 10: *Distribution showing different methods adopted by respondents.*

S. No.	Methods	Respondents
1.	IUD	01 (2.50%)
2.	Diaphragm	00
3.	Foam Tablet	02 (5.00%)
4.	Jelly Cream	00
5.	Pills	10(25.00%)
6.	Safe Period	00
7.	Injection	5 (12.5%)
8.	Operation	17 (42.50%)
9.	Norplant	00
10.	Withdrawal	00
11.	Condoms	5 (12.50%)
	Total	40

Table 11: *Impact of education of females on family planning practices.*

Education status of respondents	No. of females practiced family planning	No. of females never practiced family planning	Total
Literate	12	9	21
Illiterate	28	62	90
Total	40	71	111

P = < 0.05, chi-square significant.

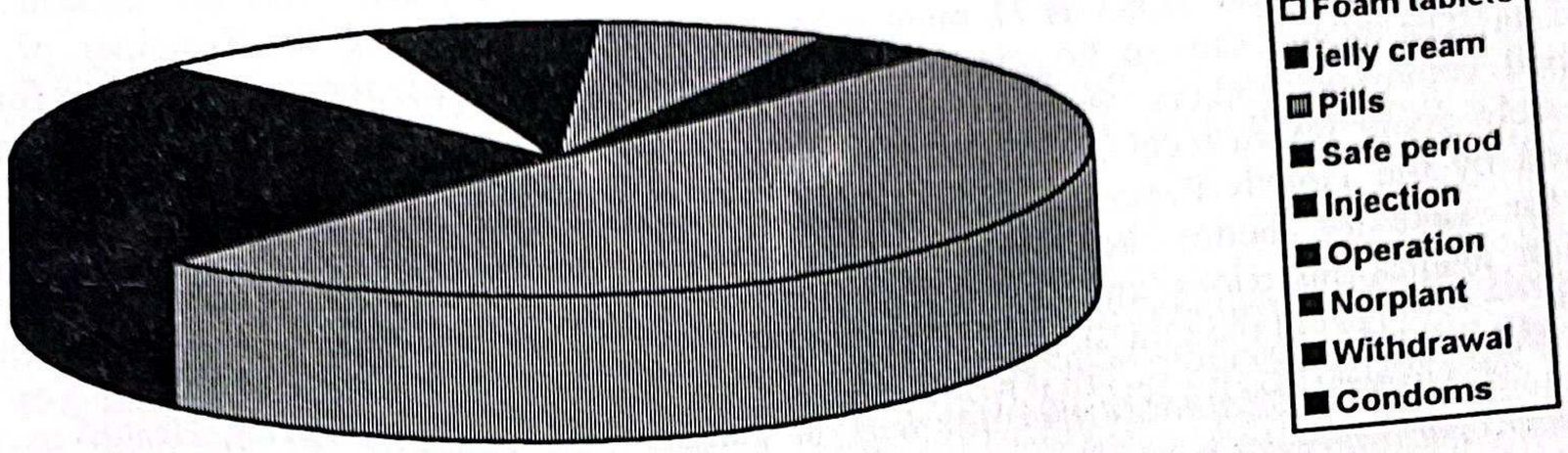


Fig. 8: Distribution showing different methods adopted by respondents.

Table 12: *Impact of fear of Allah on Family Planning Practices among different educational strata of Females.*

Education status of respondents	Fear of Allah / sin	No fear but other reason	Total
Literate	8	1	9
Illiterates	37	25	62
Total	45	26	71

P = < 0.05,chi- square not significant.

Discussion

This study concludes that the education of female has a high impact on practicing family planing. The study also suggests that most of the women in spite of having sound knowledge of family planning did not practice. Most of them never want to practice it because of fear of Allah (Jalla Shano Hoo). This was statistically proved that both illiterate and literate have the same feeling about fear of Allah(Jalla Shano Hoo) on family planning. Family planning is causing great concern for those who believe in practicing Islam in its true spirit. All the quoted results and the references about better prosperity and future are the results of researches / surveys carried out by the planners of the developed countries. Where as ALLAH(Jalla Shano Hoo) in Qur'an while addressing the Muslims (Believers) said, "

إِنَّ الَّذِينَ كَفَرُوا وَصَدُّوا عَنْ سَبِيلِ اللَّهِ وَشَاقُّوا الرَّسُولَ مِنْ بَعْدِ مَا تَبَيَّنَ لَهُمُ الْهُدَىٰ لَنْ يَضُرُّوا اللَّهَ شَيْئًا ۚ وَسَيُحْبِطُ أَعْمَالَهُمْ ۝ يَا أَيُّهَا الَّذِينَ آمَنُوا أَطِيعُوا اللَّهَ وَأَطِيعُوا الرَّسُولَ وَلَا تُبْطِلُوا أَعْمَالَكُمْ ۝

"[Verily, those who disbelieve, and hinder (men) from path of ALLAH(Jalla Shano Hoo) (i.e. Islam), and oppose the MessengerPBUH (by standing against him and hurting him), after the guidance has been clearly shown to them, they will not hurt ALLAH (Jalla Shano Hoo) in the least, but He will make their deeds fruitless", and "O you who believe! Obey ALLAH(Jalla Shano Hoo), and obey the Messenger (MuhammadPBUH) and render not vain your deeds]"[12]. The study would reveal that the anti Islamic ways should not be followed blindly. The policy makers should analyze the family planning in the light of the teaching of Holy Qur'an and Hadits.

Natural Way of Family Planning

Family planning can be achieved through coitus interruptus or by use of condoms where the life of mother is in danger (she is unable to bear the burden of pregnancy). There are other natural ways of delaying the pregnancy when medically indicated or otherwise. Allah made such an arrangement / systems, which are worth mentioning.

Safe periods;

Being members of medical profession we all know that the ovulation usually occurs at regular intervals. The safe period techniques should have

been promoted instead of undergoing surgical procedures for that purpose.

Breast-Feeding for 21 months;

Breast-feeding of the babies is 21 months as advised in The Nobel Qur'an be promoted. In developed countries mothers, were in the near past, rarely doing breast-feeding. Presently it is promoted by the Health Personals all over the world for sake of better health of babies, protection against infections and breast cancer. ALLAH(Jalla Shano Hoo) in the Qur'an says,

" حَمَلَتْهُ أُمُّهُ كُرْهًا وَوَضَعَتْهُ كُرْهًا ۖ وَحَمْلُهُ وَفِصَالُهُ ثَلَاثُونَ شَهْرًا ۚ "

[His mother bears him with hardship and she brings him forth with hardship, and the bearing of him, and weaning of him is thirty months][13]. In surah Luqman ALLAH(Jalla Shano Hoo) also explained that the pregnancy can also be from 6 months to 9 months and therefore total duration of pregnancy and breast-feeding is 2 years (24 months),

"حَمَلَتْهُ أُمُّهُ وَهْنًا عَلَىٰ وَهْنٍ وَفِصَالُهُ فِي عَامَيْنِ أَنِ اشْكُرْ لِي وَلِوَالِدَيْكَ ۖ إِلَيَّ الْمَصِيرُ ١٤"

[His mother bore him in weakness and hardship upon weakness and hardship, and his weaning is in two years --give thanks to Me and to your parents, -- unto, Me is the final destination][14].

Conclusion

"Estimated expenditures for population welfare during the year 1993-98 were 9.1 billion. A big share of this cake was allocated to increase the contraceptive provision and accelerated training in the same area"[15]. But the outcome was just; "the contraceptive prevalence has increased only by at least 1.0 percentage point per annum---or 10 points over a decade in the developing countries". Now in the next five-year plan the resources should be channelised for the increase in productivity (agriculture and industrial), rather than to decrease the progeny[16].

Allah THE ALL MIGHTY has taken through His Providence, the responsibility of providing everything to human beings (if they believe). His Apostle (Prophet Muhammad[PBUH]) advised the Muslim-Ummah that they should lead their lives and adopt them according to the teachings of the Qur'an and Sunnah and leave rest to Him. We need not interfere with the natural course and invoke the rage of the Sustainer of the worlds. Rather it is incumbent on us all to find ways and means to increase our capabilities to make use of the amenities provided by ALLAH by distributing its fruits to all and sundry equitably.

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IMPLEMENTING REPRODUCTIVE AND CHILD HEALTH PRIORITY AGENDA IN PUNJAB

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Summary

Despite tremendous human and material resource inputs into Reproductive and Child Health Care the maternal and child morbidity and mortality has not reduced substantially in Pakistan. Realizing the situation and keeping in view the new thinking on antenatal and emergency obstetric care; the Government of Pakistan has developed a Reproductive Health Package to be adapted by the provinces in their own contexts. This paper provides guidelines for the adaptation and implementation processes and concludes with highlighting the essential requirements for success.

Background

Developing countries face serious reproductive health problems such as sexually transmitted diseases, unintended pregnancies and complications from childbirth[1]. Globally, only half the women in labour have someone nearby who can help if things go wrong. More than half a million women and four million newborn infants die each year as a direct result of poorly managed pregnancies and deliveries. Another 20 million women and millions of children suffer serious and long lasting illnesses or disabilities[2].

Over four million women become pregnant in Pakistan each year and about 3.2 million of them deliver at home. It is estimated that 0.7 million pregnant women (15% of all pregnant women) are likely to experience obstetric and medical complications each year in Pakistan. About 95% of these cases with complications do not access the services, and the 5% who do use services may receive delayed or poor quality obstetric care[3].

A study issued recently by the WHO, UNFPA, Unicef and the World Bank (Reduction of Maternal Mortality) questions a number of long held beliefs about maternal mortality. It recognizes that the previous reliance on risk approach oriented ante-natal care and Traditional Birth Attendant training programmes to reduce maternal mortality must be replaced by a more comprehensive approach. Effective pre-natal care will not help women if EOC is not available, not accessible, or not utilized[4]. Therefore the challenge now is to shift the focus to improving efficient delivery of care for emergency obstetric complications, in addition to on-going maternal health care services. This primarily focuses on removing the barriers to timely care, as identified by Prevention of Maternal Mortality (PMM) Network in a "three delays model", i.e., delay in deciding to seek care; delay in reaching a first referral level facility, and delay in actually receiving care after arriving at the facility. The effective and replicable measures to overcome these barriers need to be sensitive to social, cultural, economic and health services context.

To address the issue of effective reproductive health care, the government of Pakistan has recently agreed on a comprehensive reproductive health care package. The safe motherhood initiative, including essential obstetric care (EOC), is among the four priority areas selected for urgent attention[5]. The national EOC package includes basic essential obstetric care elements needed to manage major obstetric complications that can be safely provided at peripheral health facilities, including medical treatment of sepsis, shock, eclampsia and anemia and other complications, and neonatal resuscitation. Elements of comprehensive essential obstetric care should be available at district / sub-district hospitals and include surgical obstetrics in addition to basic EOC.

Priority Areas

Following priority areas were identified by the Technical Working Group(TWG), in a workshop

held in March 1999 for Reproductive and Child Health Services.

1. Family Planning Services
2. Safe Motherhood
3. Infant (and Child)*Health Care
4. RTIs / STDs

*The child health care has not been included in the priority list but in our opinion it is essential component and more specifically in the context of Punjab where IMCI initiative has been accepted as strategic priority.

Current Situation and the Targets by the TWG

1. Family planning services

Situation

Growth Rate 2.4%
Population doubling time 27 years
Total fertility Rate 5.2 per women
Un-met need for Family Planning 37%

Target by TWG

Increase coverage
from 50% to 70% in rural area
from 54% to 100% in urban area by 2003

2. Safe Motherhood

Situation

MMR 340-500/ 100,000 Live Births
Male to Female Ratio 108:100
Home Delivery 80%
Delivery assisted by a trained provider 20%
Utilization of service outlets 5-13 %
Malnutrition in mothers 45%

Target by TWG

Reduce MMR by 15%
Reduce maternal morbidity by 30% of existing level by 2003

3. Infant and Child Health Care

Situation

IMR 85-95 / 1000 Live Births
Under 5 Mortality 137/1000 Live Births
Malnutrition in Children 65%

Target by TWG

Reduce IMR to 40/1000 live births by 2003
Introduce IMCI

4. RTIs / STDs

Situation

Magnitude Unknown
Indirect evidence from widespread traditional clinics
Treatment procedures questionable
Inadequate facilities in public sector

Target by TWG

Reduce prevalence
Create community awareness
Develop institutional capacity for prevention and case management
Integrate services with PHC

Proposed Plan to Implent the Reproductive and Child Health (RCH) Package in Provincial Context

Aim

Reduce ill health and deaths of women and children in Punjab.

Broad Objective

To improve the quality of Reproductive and Child Health (RCH) services; and increase their utilization through integrated primary health care approach.

Specific Objectives

- Establish coordination mechanisms for RCH (DoH,PWD, NGOs)
- Review and adapt the RH Package(including National Standards for FP) in provincial context
- Implement, monitor and evaluate the RH Package (including Child Health) at selected sites
- Conduct operational research on Reproductive and Child Health care provision

Major Activities Identified

01. Establish coordination mechanisms

(Establish WG including representatives from DoH, PWD, NGOs)

- Establish mechanisms for exchange of intra / inter-departmental information and data.

- Establish mechanisms for coordination between inter-departmental working groups in studying and tackling RCH health service delivery issues.
- Evolve mechanisms for partnerships with NGOs.
- Document and print

02. Develop case management guidelines and client education materials for RCH

(Establish WG including among others clinicians and health educators)

- Review the existing RH Package manual
- Develop case management guidelines
- Develop client / patient education material for RCH
- Field test and revise
- Print the manual

03. Develop operational and referral protocols for RCH

(Establish WG including among others managers and clinicians)

- Develop the protocols.
- Consult managers and supervisors and the end users of the protocols and tools in a workshop
- Revise and field test the protocols and tools
- Print the materials.

04. Develop training materials for case management guidelines and operational protocols (Session plans etc)

(Establish WG including among others training experts, clinicians & managers)

- Develop training manuals
- Field test and finalize
- Print Manuals

05. Estimate additional support required for the implementation of RCH package through all facilities of the Health Department

Working Group to prepare PC1 and identify sources of funding for cost components e.g. training conduction, drugs, supplies etc.

06. Preparation and approval of Detailed Implementation Plan (DIP)

07. Train the DoH and PWD staff

- Train Trainers
- Train Health Managers in Operational Protocols
- Train services delivery staff in Operational and Case Management Guidelines and standards (FP, Safe Motherhood, Infant and Child Health Care, RTI / STDs).

08. Provide drugs and supplies at implementation sites

09. Monitor and Evaluate

- Develop list of indicator for monitoring of RH package and National Standards for Family Planning through DoH and PWD services delivery outlets.
- Develop system for collection of data required for the agreed monitoring indicators for the RH package and National Standards for Family Planning.
- Plan and conduct baseline survey
- Impact Evaluation

10. Proposed research & development projects

- Prime focus should be on linkage development / integration among existing programmes e.g. PMP for PHC & FP)
- Development and operationalization of a model for Emergency Obstetrical Care (EOC) with new focus on Antenatal Care
- Development and operationalization of a model for Integrated Management of Childhood Illness (IMCI)
- Managing Sexually Transmitted Diseases (STDs) through PHC outlets

11. Expected outputs

- Mechanisms for intra and interdepartmental coordination developed and practiced
- RCH case management guidelines and referral / operational protocols developed
- Training materials for care providers and managers developed and personnel trained accordingly
- RCH services provided according to case management guidelines and protocols

- Operational Research projects on Safe Motherhood, IMCI and STDs developed and pilot tested

Essentials for Success

For successful implementation of the proposed plan following are the essentials:

1. Government commitment for resources
2. Development / adaptation of standard Guide-line and Protocols
3. Enhancing EOC based upon 3-delay model
4. New approach to Antenatal Care (Every pregnancy is at risk)
5. Training of managers, technical personnel & support staff (PHDC / DHDCs Network)
6. IEC material development and use
7. Ensuring drugs, contraceptive supplies and laboratory services
8. Strengthening Monitoring and Supervisory System
9. Research on behavioral, social and operational issues (IPH / PHDC / DHDCs Network)

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ASSOCIATION OF CHRONIC HBV AND HDV INFECTION WITH CHRONIC LIVER DISEASE. A CASE CONTROL STUDY

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Summary

A total of 100 cases of Chronic Active Hepatitis (CAH) / cirrhosis were selected by purposive sampling technique from 4 teaching hospitals of Lahore city. 100 controls were also matched. Then both cases and controls were tested firstly for HBsAg positively and then for anti-delta by ELISA technique. In case of HBsAg an odds ratio of about 4 and about 25 in case of anti-delta was calculated, showing statistically significant association between chronic HBV, HDV infections and CAH / cirrhosis.

Introduction

Hepatitis B virus (HBV) infection with its large number of chronic carriers is a major health problem of world wide concern. Because its long lasting persistance plays a major role in the development of chronic liver disease i.e., chronic active hepatitis (CAH), cirrhosis and hepatocellular carcinoma (Fatlovich et al., 1991).

As quoted by Hoofnagle (1986), in the initial description of delta viral hepatitis (HDV), Rizzetto et al. Found that it was associated with more advanced and progressive form of chronic hepatitis such as CAH and cirrhosis. In the light of all above this case control study was conducted to know the association of chronic HBV and HDV infections with chronic liver disease i.e., CAH and cirrhosis.

Materials and Methods

This study was conducted at Microbiology department of institute of Punjab health Lahore.

Using purposive sampling technique, the required sample i.e., 100 cases were selected from the patients admitted in 4 teaching hospitals of Lahore i.e., Mayo, General, Sir Ganga Ram and Services Hospitals. Only those cases were included who were diagnosed by the consultant physicians on the basis of clinical and biochemical findings. While controls were selected in 1:1 ratio from healthy general population of the area around the different hospitals after matching for major confounders like age, sex, marital status, occupation and socio-economic status.

5 ml blood was drawn form all the 200 subjects into vacutainers and serum separated by spinning in centrifuge and sera stored at 20°C. All the sera (both form cases and controls) were screened firstly for HBsAg and then for anti-delta (who were positive for HBsAg) by ELISA technique. The ELESA kits manufactured by Flow Laboratories Brussels, Belgium were used normally Hepa TEK HBsAg and Delta TEK Ab.

Mausner and Kramer (1985) mention that analytic studies are designed to determine if an association exists between a factor and a disease and, if so, the strength of association which can be measured by calculating relative risk. In turn relative risk is measured by estimating incidence rate of disease under study among those with or without the factor suspected. It can easily by calculated in prospective studies but can not be derived from case-control study because there is no appropriate denominator (population at risk). Therefore in case control study, the relative risk is estimated by a ratio termed "Odds ratio" the calculation is as under:

	Cases	Control
Exposed to the Factor	(a)	(b)
Not exposed to the Factor	(c)	(D)

Odd ratio is obtained easily by multiplying diagnoally and the symbolic representation is:

Odds ratio or approximate relative Risk = $^{ad}/_{bc}$

Table 1: *Distribution of HBsAg and anti-delta in cases (CAH / cirrhosis) and controls.*

Category	No. Tested	HBsAg		Anti-delta	
		Positive	Negative	Positive	Negative
Cases	64	36	20	80	
Controls	100	31	69	1	99

To determine the association among HBV and HDV infection and chronic active hepatitis / cirrhosis, this ratio was used.

Results

After analysing the delta, following results were obtained:

1. Association between HBsAg and CAH / cirrhosis Table 1 gives the distribution of HBsAg in 100 cases and their 100 conbols.

The odds ratio was as under:

	Cases	Control
HBsSg Positive	64 (a)	31 (b)
HBsAg Negative	36 (c)	69 (d)

Odds ratio = $^{ad}/_{bc}$ = $^{64x69}/_{31x36}$ = **3.96**

2. Association between Delta infection and CAH / Cirrcoin.

Using Table 1

Relative Risk (odds ratio) was calculated as under:

	Cases	Control
Anti-delta positive	20 (a)	1 (b)
Anti-delta Negative	80 (c)	99 (d)

Odds ratio = $^{ad}/_{bc}$ = $^{20x99}/_{1x80}$ = **24.75**

Discussion

Sequential histological studies have demonstrated that chronic hepatitis B infection may progress to chronic active hepatitis and further into a macronodulaur cirrhosis (skinhoj et al., 1978; Dehinhardt and Gust, 1982). The increased frequency of HBsAg in patients with hepatic cirrhosis may reflect causal relation ship (Williams et al., 1972; Skinhoj et al., 1978). Analysis of our nemlts revealed significant difference (P>0005) in the prevalence of HBsAg in cases and controls (Table 1). Odds ratio showed that HBsAg carries are 4 times at greater risk of developing CAH / cirrhosis than HBsAg negatives.

Delta agent infection was associated with chronic hepatitis such as CAH / cirrhosis. This association has been documented in many studies form different parts of the world (Hoofnaglee, 1986). Our study showed significant difference (P<0.005) in the reactivity for anti-delta between cases and controls (Table 1). Odds ratio indicates that HDV chronically infected individuals are 25 times at greater risk for developing chronic liver diseases than negative for HDV infection.

Relative risk provides a direct measure of strength of association. A relative risk of one indicates no association, lesser than one may imply a protective effect and greater than suggests positive association. The larger the relative risk, the greater the likelihood that the suspected factor is causally related to the disease under study. But both significant deference and greater relative risk do not necessarily imply direct causal association (Park and Park, 1997). Therefore, we can not declare etiological association between chronic HBV, and CAH / cirrhosis. But it provides feed for thought in this regard.

Certain criteria have been evolved for deciding the etiological association. Report of Advisory Committee to Surgeon General of the Public Health Service in US has pointed out that the likelihood of a causal relationship is increased by the presence of the following criteria (Mausner and Kramer, 1985, Park and Park, 1997).

1. Strength of association.
2. Temporal association.
3. Consistency of the association.

4. Biological plausibility.
5. Coherence of the association.

It is, therefore, concluded that in this respect further in depth inquiries are strongly indicated.

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ROLE OF FINE NEEDLE ASPIRATION BIOPSY IN THE DIAGNOSIS OF BREAST LUMPS

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Summary

Fine needle aspiration biopsy (FNAB) is an increasingly accepted method for investigating and pre-operative diagnosis of palpable breast lumps. FNAB was done on 150 female patients with palpable breast lumps and results were compared to histopathological findings in all cases after excision. The overall accuracy rate was 68%, sensitivity was 74.5% while specificity was 64.6%. After excluding the unsatisfactory smears from calculations the sensitivity was 82.6% and specificity was 100%. In 3.3% cases false negative diagnosis was made while no false positive result was obtained, the technique of FNAB is simple, quick and well tolerated by the patients. It can be performed as an outdoor, clinic or office procedure. Lot of time and hospital resources can be spared, it is a safe procedure and no complication was found in the present study.

Introduction

Although fine needle aspiration biopsy (FNAB) for the diagnosis of tumours has attracted most attention recently. Martin and Ellis[1] did a large work in 1920 on this technique at Memorial Hospital New York. However fine needle aspiration biopsy cytology, as a diagnostic technique for tumours did not gain wide acceptance in USA for decades[2]. The main reason for little acceptance was reported due to fear from spread of malignancy along the needle tract via blood vessels and lymphatics to the distant sites[3]. Since early 1950's FNAB has become a popular procedure with increasing interest[4]. Credit goes to the Scandinavian workers for their continual efforts which resulted in the present world wide acceptance of this method.

Aspiration biopsy cytology of breast is being done as a routine procedure at different countries of the world such as France[5], Germany[6], Japan[7], Finland[8], Canada[9], Yugoslavia[10] and USSR[11].

In England FNAB was not very much popular till 7th decade of this century when certain workers reported excellent results[12,13].

FNAB has established its role in the diagnosis in breast lumps as a simple, quick, cheaper, well tolerable and reasonably reliable method of outdoor, clinic or office procedure.

Methods and Materials

This study was conducted on 150 female patients with palpable lump breast, visiting Surgical out patient department of Sir Ganga Ram Hospital, Lahore. After record of detailed history and thorough examination the aspirate from the lump was obtained with fine needle of 18 gauge attached with 20 cc luer-lock disposable syringe. After proper cleansing and draping, using left hand, the lump was fixed between thumb and index finger. Sometimes the help of an assistant was sought to fix the lump. A 20 cc disposable syringe attached with 18 gauge needle was introduced in the lump. Negative pressure was created in the syringe by withdrawing the plunger. The needle was moved around in different directions in the lump, so that few cells may dislodge, then the plunger of the syringe was released slowly to its normal position. This equalisation of the pressure in the syringe was necessary to prevent the aspirated material from being sucked into the syringe where it might be lost. Secondly the malignant cells were not aspirated in to the needle tract. After withdrawing the needle firm pressure was applied over the puncture site. The needle was disconnected and then reconnected after filling the syringe with air. The contents of the needle were blown on a glass slide. The procedure was repea-

ted at different site in the lump. The smears were made in a way similar to the way blood smear is made. The smears were immediately fixed with absolute ethanol while still moist. Air drying before fixation was avoided due to the reason that cells appear some what shrunken after air drying and the nuclei appear more densely stained. Air drying also cause artefacts. A minimum fixation for 30 minutes was done before transporting speci-mens to the pathology laboratory. In the lab the FNAB smears were stained by haematoxylin eosine method.

The results were classified as:

1. Malignant cells seen.
2. Benign cells seen.
3. Suspicious of malignancy.
4. Un-satisfactory material for diagnosis.

The accuracy of cytodiagnosis was calculated as a percentage of correct diagnosis made by cytology as compared to final diagnosis made on the excised lump in all cases. The sensitivity in aspiration cytology was calculated as percentage of those patients having carcinoma and who were so indicated by cytology i.e.,

$$\frac{\text{True Positive}}{\text{All those with carcinoma}} \times 100\%$$

The specificity was calculated as a percentage of those patients with no carcinoma and who were so indicated by cytology i.e.,

$$\frac{\text{True Negative}}{\text{All those without carcinoma}} \times 100\%$$

Results

Sufficient material for cytological diagnosis was obtained in 110 (73.3%) out of 150 cases aspirated. In 40 (26.7%) cases aspiration was reported as unsatisfactory smears. No attempt was made to repeat the aspiration in cases with unsatisfactory smears, except in three clinically suspicious cases. Which on second attempt at aspiration showed malignant cells. In 38 cases the smear showed the malignant cells. In 69 case smears showed the benign cells although 5 cases (3.3%) on histology turned out to be malignant (false negative).

Table 1: *Cytological Findings in all cases aspirated.*

Cytologic Findings	No. of Cases	Percent
Malignant Cells	38	25.3
Benign Cells	69	46.0
Suspicious Cells	03	2.0
Un-satisfactory Smears	40	26.7
Total	150	100

In 3 cases the smears were not conclusive of malignancy and were reported as suspicious for malignancy.

In 40 cases the cellular material was scanty of insignificant morphology and these smears were labeled as unsatisfactory. No false positive diagnosis was made. Out of 51 cases with final diagnosis of malignancy 38 (74.5%) were correctly diagnosed by aspiration Biopsy. In benign tumours 64 cases (64.6%) out of 99 were correctly diagnosed by aspiration biopsy. Sensitivity of aspi-

Table 2: *Cytological Findings in all cases aspirated.*

Cytologic Findings / Cytologic Diagnosis	No. of ases	Accuracy of Cytologic Findings Verified by Histology	Final Histologic Diagnosis on Open Biopsy	Accuracy of Cytology (Percent)
Malignant	38	38	51	74.5
Benign	69	64	99	64.6
Suspicious	03	-	-	-
Un-satisfactory smears	40	-	-	-
Total	150	102	150	68

ration biopsy in this study was 74.5%. While specificity was 64.6%. The difference between 74.5% and 64.6% statistically is insignificant and p > 0.05. After excluding un-satisfactory smears from calculations, as some workers are of the opinion that failed aspiration should be considered no aspiration at all[14], the sensitivity was 82.6% and specificity 100%.

Discussion

While discussing the utility of a diagnostic procedure one should keep in mind three important factors viz. Sensitivity, specificity, and practical success of that particular procedure. Sensitivity may be defined as the ability of a particular procedure to detect or diagnose the disease when it is present. Specificity may be defined as the ability of a procedure to rule out the disease when it is not present. While practical success means the production of satisfactory enough material for diagnosis, simplicity and ease of that particular procedure, cost of that procedure and acceptability of that procedure by the patients.

The overall accuracy of FNAB was found to be 68%. The accuracy rate found in this study is comparable to that of kern[15]. Some of published reports[16,17] have reported a lower accuracy rate ranging between 52% to 58%. While this result is lower than reported by Duguid et al[18]., Chu and Hoye[19] and Von Haam[20] who reported accuracy rate between 72% and 92.9%.

The sensitivity of FNAB in plapable breast lumps in this study is 72.5%. It means that FNAB correctly diagnosed 38 cases out of 51 cases of histologically proven breast carcinoma. The sensitivity of aspiration biopsy in the present study is comparable to that reported by Esposti et al[21]., who reported it to be 72.8%. Some researchers like Kern[15] found it to be as low as 48% while others like Von Haam[20] found it as high as 93.8%.

The specificity was found to be 64.6%. It is less than that found by Duguid et al[18]., who reported it to be 68.5%. The reasons for low specificity in the present study was due to higher un-satisfactory smear rate in cases of benign lesions which was 35.4%.

In this study 110 out of 150 aspirations were successful and sufficient enough material was obtained for diagnosis. Therefore, this procedure was successful in 73.3% of cases. In 40 cases (26.7%) un-satisfactory smears were found. This result is comparable to some other published report[22].

Franzen et al[23]., described a special equipment which consist of an ordinary syringe with a holder which enables the surgeon to use one hand for aspiration and the other hand may be used to hold the lump while aspirating. Esposti et al[21]., and Schonodorf[24] by using this equipment have reported that it reduces the number of failures. Another way of improving the success rate is to repeat the aspiration[9].

In three of malignant cases in the present study satisfactory smears were obtained and carcinoma was diagnosed in the second attempt.

The procedure of fine needle aspiration biopsy was found to be cheap, simple and easy to perform. Only ordinary 20 cc disposable syringe with 18 gauge needles were needed to carry out the procedure. In this study not a single patient refused the procedure or complained of discomfort during the needle biopsy even when these procedures were performed without local anesthesia just by sedating the patient. Stravic et al[10]., have estimated that about 35% of patients refuse recommendation for surgical biopsy and they accept recommendation for FNAB. They have also reported that when malignancy was diagnosed by FNAB, the patients agreed to surgery and radiation. Surgical biopsy needs hospitalisation and being itself a surgical operation involves all its risk and post-operative complications. FNAB does not need hospitalisation and can be performed on out patient basis in a few minutes time compared to about half an hour of theatre time required for surgical biopsy. It may also obviate the need for opera biopsy, thus saving professional time and hospital resources. Aspiration biopsy routinely performed as out door diagnostic procedure is said to save millions of dollars[3]. FNAB did not show any complication in this study. Shabot M. M. et al[25]., reported that only one minor complication, a superficial infection occurred in their series of 81 patients.

A definitive pre-operative diagnosis of malignancy allows a number of patients to be psychologically prepared for mastectomy and enables family support during a very stressful period[26]. FNAB is diagnostic as well as therapeutic procedure for the breast cysts. The main objection of aspiration of breast cyst is that Inracyctic carcinoma may be missed. Rosemond et al[27]., found 3 (0.1%) cases of inracystic carcinoma in a series of 3000 breast cysts. All these cases were diagnosed by cytology of the aspirated fluid. One of the most important objections against needle biopsy is the

possibility of dissemination of malignant cells along the needle tract or distally through the blood and lymphatics. Robbins et al[28]., reported the results of 5 years follow up of 1463 cases with breast malignancy. They concluded that aspiration biopsy seems to have no effect on long term survival rates. According to them there is no reasons to consider aspiration biopsy detrimental to the patients. Rosemond et al[27]., found no evidence of tumour cells implantation in the needle tract; in their series of 67 patients; who underwent mastectomy and their malignancy was diagnosed by aspiration biopsy. The average interval between the aspiration and mastectomy was 12 days and largest was 34 days in their series. However, the only reported tumour dissemination after FNAB is in case of carcinoma of pancreas reported by Ferrucci et al[29].

Conclusion

In conclusion FNAB was found to be a simple diagnostic procedure. It has the advantage that it can be performed as an office procedure in the out patients department or in a clinic. This procedure was well accepted by the patients without any discomfort. The method was found to be safe without any complication. This method of diagnosis can save a lot of time of patients as well as doctors. The procedure of FNAB can influence the management of breast masses by pre-operative diagnosis. However a negative needle biopsy report in the presence of clinical suspicion for malignancy should be discarded and open biopsy must be done.

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LEADERSHIP ISSUES: OUTLOOK AND PERCEPTION IN AN ORGANISATION COMPRISING TWO DIFFERENT TEAMS

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Khalid

Introduction

This report is the result of a study carried out over two days from 12th - 13th April 1994 at Alcohol Services for the Community (ASC), a Bedfordshire based non-statutory charitable organisation. It works in partnership with the South Bedfordshire Community Alcohol Team (CAT) a multi-disciplinary, multi-agency treatment team.

Aim

In this study I will look at the leadership and management issues in ASC and CAT and how these two different teams perceive leadership in relation to their work.

Background To The Study

The idea of this study came when I first visited the organisation. I was informed that there are two teams working in this organisation. One is ASC managed by a Director and other is CAT which does not have a designated manager but a co-ordinator.

I was told that CAT is a unique team in the region because it is functioning successfully with out a designated leader or a manager. This intrigued me and prompted me to look at the leadership / management issues and how both the teams perceive it.

Back Ground Information of ASC and Cat

ASC is mainly engaged in preventive work related to alcohol use, misuse and abuse, comprising a range of projects which are totally separate from CAT based work. CAT on the other hand deals with alcohol treatment interventions, working with people who are often in crisis.

(Structure and aims and objectives of ASC and CAT appears in Appendix I).

South Bedfordshire Community Health Care Trust has the ultimate financial responsibility for alcohol which comes within its Mental Health remit. The Trust has a contract with ASC to convene, accommodate and provide secretarial and co-ordinating staff for CAT. Therefore the Trust financially underpins CAT.

Four members of the CAT are employed by ASC, two of whom work 50% of their time for CAT. The Trust sponsors some of the staff. Other staff are sponsored by Social Services and Probation.

Accountability for all CAT members remain with their sponsoring agencies.

ASC core funding is from Joint Finance Grants. Additional contract work supplements their funding requirements.

(For further details about ASC and CAT see Appendix III and Appendix IV.)

Methodology

Interviews

Exploratory interviews were conducted with the Director of ASC and with the Co-Ordinator of CAT.

Brief interviews were also conducted with other members of ASC.

Questionnaire

Due to time constraints it was not possible to arrange for individual interviews with each of the CAT members, a questionnaire (Appendix II) was developed, based on the literature reviewed was developed, and distributed amongst the CAT members.

I also attended a CAT meeting as an observer.

Documents

- Following documents were reviewed to understand the structure and functions of the ASC and CAT.
- Alcohol Services for the Community Annual Report 1992 / 93 (Appendix III).
- South Bedfordshire Community Alcohol Team Annual Report 1992 / 93 (Appendix IV).

In addition a few reports written by the Director of the organisation were also consulted.

Limitations of the Study

The interviews with the Director of ASC and CAT co-ordinator were exploratory and issues were 'probed'.

However as Oppenheim suggests "The risk of interviewer bias is probably at its highest whenever probes are employed". (Oppenheim 1992: 113)

Although efforts were made to minimise this bias it could not be completely ruled out.

Attending the CAT meeting was helpful in understanding the functions and operations of this team. A single attendance however was not enough to bring out all the facts needed to be observed for the study. Therefore mainly the questionnaire (Appendix II) was used for this purpose.

The questionnaire distributed to the CAT team contained open questions.

Although open questions bring back ideas of the people in their own language which are expressed spontaneously, they are time consuming and demand more efforts from the respondents. In view of this I now feel that closed questions would have been better in this particular study. This is because I feel that they may have increased the response rate as little time and effort would have been needed to answer them. (Oppenheim 1992).

Due to these short comings, the short period of time allowed in carrying out this study and that it was a very small organisation, I feel that scope of this study is limited.

Leadership

"Leadership had been defined in terms of individual traits, behaviour, influence over other people, interaction patterns, role relationships, occupation of an administrative position, and perception by others regarding legitimacy of influence" (Yukl 1989: 2).

"Leadership is discovering the route ahead and encouraging and - personality permitting - inspiring others to follow". (Stewart, 1989: 3).

There is a wide range of definitions of leadership by various persons. I will examine how the Director provides leadership or manages both the teams and how it is perceived by them, based on the interviews and responses given to the questionnaire.

The Director of ASC, as she explains in the interview, has a direct line responsibility of ASC but her role is unclear concerning her responsibility for the achievement of objectives of CAT. In order to affect the output of the CAT she is forced to adopt strategies in addition to using management skills. This requires her to become more of a leader and less of a manager.

The Director explained how she exercises her leadership skills by giving the example of the implementation of a no smoking policy in the premises of the organisation.

The Executive Committee of the organisation asked the Director to introduce a no smoking policy. This, according to the Director was a radical change in the organisation in the recent past and would affect the clients, staff and team members, some of whom smoke. As lease and contract holder ASC is responsible for the building and aspects of health and safety.

As Director of ASC she raised the issue with the CAT. She consulted the CAT members and the clients by means of a survey and open discussions. This shows that the Director chose to present the problem to CAT and to discuss it with them before making a decision. In this instance it seemed that she elected to be more on the right hand side of Tannenbaum and Schmidt's continuum, knowing that in this particular case it was vital for workers to own the discussion about smoking in the building. (Tannenbaum and Schmidt 1973).

The discussions before adopting no smoking policy were not considered sufficient by the CAT members. Although most of the staff of ASC and CAT are non-smoker, many clients who visit the organisation are smokers. The counsellors who are

non smokers actually defended the right of their clients to smoke as they find it difficult, professionally to ask them not to smoke, as they are mostly in distress when they come for counselling.

They felt that this policy was imposed upon them and the Co-ordinator of the CAT who is also senior member of ASC mentioned this during her interview with me.

The Director admitted that the whole process of introducing the no smoking policy caused conflict with the CAT and for the period of negotiation created considerable pressure on her. This shows that the leadership is lacking in vision or at least unable to transmit that vision to others with enthusiasm. Vision and inspiration are two of the most important aspects of leadership (Stewart 1989).

After the no smoking policy was decided it was communicated to the staff and the clients. This was evident from notices which I saw whilst visiting the organisation, which were displayed prominently about the no smoking policy.

The Director gave me further information that managing the conflict highlighted a need to win, be right or perhaps dominate. Here she seems to lead by coercion rather than consent. However Stewart has said, "There is Positive value in seeking, wher-ever possible to lead by consent rather than coer-cion". (Stewart 1989: 12).

A consent can create a sense of belonging and ownership of the decision and the organisation.

The Direction mentioned that she often wished that she had not suggested the implementation of No Smoking Policy. This shows that her commitment and belief in the policy may have wavered perhaps momentarily. This unconscious equivocation on her part may have been observed by the team members and prompted resistance to the policy. The leaders first task is to point the way and the only way to do this is by knowing the direction that they want to go. (Stewart 1989).

During implementation of this policy the director faced moments of frustration. Throughout this process she says, she tried to produce an environment within which the energies of the team members were released and they could produce a no smoking policy by consent, following the theory Y (McGregor 1960). During these moments of frustration she often wanted as she said, to act according to theory X (McGregor 1960), thinking that the team needed to be coerced, controlled or directed. This shows that she had slight lack of confidence in herself or in the team.

After managing the conflict and implementing the no smoking policy the Director reviewed the whole situation. By doing this I feel that she was trying to analyse and learn through her experience. This process of reviewing can enable a leader to overcome his / her personality defects if present (Stewart 1989).

Perception Of Leadership

Now I will look how the two teams perceive the leadership.

In response to the question, 'Do you have a leader in the team you are working with?' some of the answers by the CAT member were:

- "No appointed leader as such. Team members all may have leadership qualities".
- "No, we have a co-ordinator"
- "No it is not possible because of the present set up".
- "No - it is a multi agency, multi-disciplinary"

They mostly denied that they have a leader in CAT but whenever a team is in crisis or in process of radical change a leader is needed to implement it successfully. (Stewart 1989)

When I asked about the personal qualities a team leader should have, some of the responses by the CAT members were:

- "Be able to listen to others ideas".
- "Be aware of work load, skills and strengths of the team".
- "To be able to stand on his / her own and not being afraid of change or taking chances".
- "Has the ability to communicate".

These are almost the same qualities mentioned by Stewart (Stewart 1989).

When I asked what role should a leader have in a team like CAT, the answers were:

- Unsure because of the Power Base
- Clear vision, knowledge of direction and strategy.
- Totally unbiased

Although they have said that they have no team leader in CAT, some of them do have a

vision of a leader in their minds. Which suggests that at least they feel the need for a leader.

The CAT members are working away from their parent departments and are accountable to absentee managers. The controls come from within the CAT and decisions are made jointly. They want to work as 'Neo Dionysians' a term suggested by Mr. Martin Walter to refer to various new professionals who are bounded by their organisation but want to work free of its rules and regulations.

Finally I will discuss the brief interviews with the two members of the ASC, the Secretary and the junior office support. I will also explore how they perceive the leadership.

Regarding the small size of ASC random sampling of the employees was not possible. Therefore element of bias related to the views expressed by these two employees cannot be ruled out. The results could be different if a large sample was available.

I asked them about the qualities a leader should have. They gave no reply to the question. When asked about their participation in the decision making process of ASC they said that they are not involved in it. They have to do the work they are given.

These two members were not willing to discuss the issues in detail, perhaps they were not sure that they could remain anonymous because of very small size of the organisation.

Both of these members of ASC were not enthusiastic about the commitment to the organisation and had no pride in it. They were ready to leave the organisation if they can get another job. When asked about their job satisfaction, they placed themselves in the middle on a scale ranging from zero to ten. They may be showing 'Cognitive Dissonance' as they are not satisfied with their jobs but accept it half heartedly because it is difficult to find a new job in this period of recession.

This is the team the Director says she has direct line management responsibility for and she can tell them if she is not satisfied with their work. Regarding this team the Director has a position of power. For the CAT she has got no such position of power and therefore tries to influence it indirectly and sees her power to lie in the fact that ASC holds the lease of the building, and allows the CAT to use it as their base. In addition ASC holds the contract with the Health Authority and the Director line-manage some of the CAT members who are in turn staff of ASC.

As a result of this discussion and looking at the structure of the teams (Appendix I) It seems that CAT has more resemblance to person culture (Handy 1985) whereas ASC has more observable role and club culture characteristics Ironically the role culture tries to coerce the others.

Conclusions

The director has a position of power in ASC and has a direct line responsibility for the ASC. She feels no difficulty in dealing with management and management problems with in this team. She feels that she can tell the ASC members what to do and what not to do, in other words she can dictate as director of ASC.

Regarding CAT she has no such powers. There she uses indirect methods to influence the achievement of the objectives of CAT. She call these methods leadership. Leadership is needed to affect change and to cope with difficult environment. (Stewart 1989) The dilemma is that CAT members do not accept that they have a leader. They are happy to work as a team making decisions by consent. A need for leadership arose when the CAT faced a crisis while introducing a no smoking policy. They could not come up with a consensus to implement the no smoking policy. They needed a leadership at that point. The director of ASC was given the task and therefore worked as a leader. She opted to coercive rather than having a decision by consent.

I think the CAT members are mentally prepared to accept a leadership perhaps a participatory or a shared leadership. One thing is clear that they don't want to be dictated to.

The people who work for both CAT and ASC are under the influence of the Director as staff members of the ASC. When they are carrying out their duties as CAT members then the director faces an unusual situation. She has to consider what powers she has got to influence the ASC members, her direct managed team, when they are participating in the activities of CAT.

The ASC members mostly have little pride in the organisation. They have no enthusiasm in working for it.

The problems and conflicts faced by both the teams can be explained by the predominant role and club culture characteristics observed in the ASC and basically a person culture of CAT who's members tend to work more independently.

Recommendations

1. The Director who is direct line manager for ASC should use her leadership skills to enthuse inspire and build confidence in ASC staff so that they share a common vision of what the group should be achieving. This can be done by showing consideration for the staff, making them feel important and caring for their needs and wishes as far as possible.
2. The Director should let the CAT work as a self regulating team, providing leadership without necessarily always leading from the front. The CAT also needs an agreement on a common vision and values. The Director can influence to achieve CAT objectives by working out a strategy as suggested by Stewart on the following lines.

- Finding and encouraging her allies in the team
- Putting forward her ideas persuasively at right time, i.e., when the team can not come to a consensus or fail to achieve its targets. (Stewart 1989).

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CHLOROQUIN EFFICACY AGAINST PLASMODIUM FALCIPARUM, IN PUNJAB PAKISTAN

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Summary

The efficacy of chloroquin against Plasmodium falciparum malaria was determined in two districts Muzaffar Garh and Sheikhupura of the Punjab Province of Pakistan. The in vivo tests were conducted during non-transmission months of December 1997 and January 1998. In district Muzaffar Garh, chloroquin was found to be sensitive 64.44%, RI 31.11% RII 4.44% and RIII was not found, while in district Sheikhupura the sensitive was 33.3%, RI 66.6% and no RII and RIII resistance found against chloroquin. Mefloquin was found 66.6% effective and only 33.3% RI resistance against Mefloquin in district Sheikhupura. The findings warrant that top priority be given to determine the exact status of chloroquin against P. Falciparum in future research activities in Pakistan.

Introduction

Drug resistance is the ability of a parasite to multiply or to survive in the presence of a concentration of drug that normally destorys the parasites of same species or prevents their multiplication. Such resistance may be relative or complete[1].

Pharmacokinetics of certain antimalarials have however lead to a modification in this definition. Accordingly the drug resistance is defined as "the form of drug active against parasite must gain access to the parasite or the infected red cell for the duration of time necessary for its normal action[2].

The internationally accepted procedure for assessing response of malarial parasite to therapeutic doses of anti-malarials with particular emphasis on chloroquin was set out by a WHO scientific group on resistance of malarial parasite to drugs in 1965[3].

As a chloroquin the initial 2 stage *in vivo* test was revised by the WHO scientific group on chemotherapy of malaria in 1973[4]. According to this revision, chloroquin is administrated either as a single dose of 10 mg base / kg body weight and follow up of patient was made for 4 weeks. Alternatively, 25 mg base / kg body weight over 3 days[5] i.e., 10 mg/kg on day 0 and day 1, then 5 mg/kg on day 2. With a follow up for a week, 7 days field test or the extended field test where follow to be extended for 28 days provided the possibility of reinfection is effectively excluded. Criteria for the results of the *in vivo* tests interpretation is as follows.

Response	Symbol	Evidence
Sensitive	S	Clearance asexual parasitaemia, within 7 days of initiation of treatment, without subsequent recrudescence.
Resistance I	RI	Clearance of asexual parasitaemia as in sensitivity followed by recrudescence.
Resistance II	RII	Marked reduction of asexual parasitaemia but no clearance.
Resistance III	RIII	No marked reduction of asexual parasitaemia.

The question as to how malarial parasite particularly *plasmodium falciparum* develops resistance to chloroquin has been under investigation of biochemists and genetists, during last thirty years. However, no satisfactory explanation has so far been advanced for the mechanism underlying the development of resistance. Some of the factors which play an important role in development and propagation of drug resistance in *P. Falciparum* are mass drug administration, inadequate therapy, vector intensity, movement of population and immune status of public[6].

Material and Methods

The present study on 64 subjects was conducted in districts of Muzaffar Garh and Sheikhupura. This selection was based on the high malaria incidence and high *P. Falciparum* ratio.

The only practicable method of eliminating the chances of reinfection is to carryout test in the known transmission session i.e. November, December and January in Pakistan. The minimum threshold of 1000 asexual parasites per cubic millimetre of blood was selected. The cases of mixed infection and previous intake of 4-aminoquinoline as revealed by urine examination were not included in the test. The test cases who met the criteria were weighed and chloroquin dose as per schedule, 10 mg/kg on day 0 and I and 5 mg/kg on day 2 administered[5].

The urine was tested using Dill-Glazko for the detection of chloroquin metabolites in the samples. For this 10 drops of Dill-Glazko eosin were added to 2ml urine in test tube and mixed vigorously for 15 seconds. The presence of choloroquin in urine is indicated by change in colour due to precipitated chloroform from light yellow to voilet red[7].

The follow up blood slides were obtained from all the test cases on days[1-5,7,10,13,16,19,22,25,28] for monitoring of the course of asexual parasitaemia[6].

For this after initial fixation of thin smear with methanol both the thick and thin smears were stained for 35 minutes with 2.5% Giemsa. Asexual parasites. In case of gametocytes, the count was continued till 2000 WBC,s. The slides were declared negative only after a thorough search of at least 100 fields[5].

Results

The results showed that in Muzaffar Garh RI stood at 31.11% in 1997 as against zero precent in 1978 and 46.67% in 1996. The RII, resistance was zero in 1978, 25% in 1987 and 4.44% in 1997. On the otherhand, in district Sheikhupura, however the RI resistance was 66.6% against chloroquin and 33.4% against mefloquin in 1997. While it was 3.33% in 1981 and 29.82% in 1990. The RII against chloroquin was 7.02% in 1990, and was zero in 1981, 1982 and 1997. RIII was not observed.

Table 1: *Consolidated Results of Antimalarial Drugs Sensitivity Tests in the Local Strains of Plasmodium falciparum in District Muzaffar Garh & Sheikhupura from 1976 - 1997.*

Date	Place	Drug Used	Sensitive	RI	RII	RIII	Absent**	Total
*Jan-Feb 1976	M Garh	Chloroquin	n=50	0	0	0	0	50
*Oct-Nov 1987	M Garh	Chloroquin	n=11(30.56%)	n=16(44.44%)	n=9(25%)	0	3	39
		Amodioquine	n=15(71.43%)	n=6(28.57%)	0	0	2	23
*Nov-Dec 1996	M Garh	Chloroquin	n=15(50%)	n=14(46.67%)	n=1(3.33%)	0	0	30
*Dec-1997	M Garh	Chloroquin	n=29(64.44%)	n=14(31.11%)	n=2(4.44%)	0	7	52
*Oct-Nov 1981	Sheikhupura	Chloroquin	n=58(96.67)	n=2(3.33%)	0	0	0	60
*Feb-1982	Sheikhupura	Chloroquin	n=39(100%)	0	0	0	0	39
*Nov-1990	Sheikhupura	Chloroquin	n=36(63.16%)	n=17(29.82%)	n=4(7.02%)	0	7	64
*Dec-1997	Sheikhupura	Chloroquin	n=2(33.3%)	n=4(66.6%)	0	0	0	6
		Mefloquin	n=4(66.6%)	n=(33.3)	0	0	6	

(*Ashraf M., 1993, **Test case left during study)

Discussion

Resistance of *P. falciparum* to chloroquin, the best known of the 4-aminoquinolines, was first noted in the late 1950's from Colombia and Thailand. Reports of similar resistance patterns quickly followed from other countries in South America and South East Asia[8]. The first well documented case of chloroquin resistance *P. falciparum* from Africa was reported in 1997 in a tourist, who had contracted the infection in Kenya. Since then, cases have increasingly been reported among non immune visitors to East Africa[9]. From 1981 onwards, resistance has also been reported among indigenous semi immune inhabitants[10].

After repatriation of Pakistani nationals from Bangladesh in 1973-74, suitable subjects from districts of Jhang, Muzaffar Garh and D. G. Khan were included in the first ever *in vivo* test in the country which was conducted during Jan-Feb 1976. No resistance strain was found uptill 1981. In 1982 another test was run in district Sheikhupura where for the first time two chloroquin resistance cases were found. In this test sixty cases were tested[11].

This was followed by a case of RIII resistance falciparum malaria detected in a Pakistani national in December 1992. He was a male from Rahim Yar Khan, who had visited Saudi Arabia for Umrah[12].

Emergence of chloroquin resistance to the extent of 20% to 30% is sufficient to warrant that life threatening and serious suitation has occurred and this should be treated with parentral administration of quinine instead of chloroquin. This will provide benefit of doubt to the patients as recommended by WHO advisory committee for areas with chloroquin resistance[13].

The epidemiological situation in India, our neighbouring country is rather serious. In 1978 chloroquin sensitivity in India was 89.85% which in 1995 stood at 7.6%. S/RI resistance in India in 1995 was 76.5%, RI 6.3%, RII 5.3% and RIII at 4.2%[14].

In view of this report and outbreaks of chloroquin resistance *P. falciparum* in India, the health department of Pakistan need to be more vigilant to avoid a similar scenario.

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DIETARY HABITS AND DENTAL CARIES EXPERIENCE IN ADULT POPULATION OF VILLAGE MAGHIAN, DISTRICT ATTOCK

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Summary

The present study was conducted to evaluate the relationship of diet and dental caries in a rural population. It was observed in the study that females and subjects in the older age group had a higher caries experience. No relationship between diet and dental caries was found in the present study.

Introduction

Dental caries is one of the most common diseases in the world. It differs in its distribution from country to country and within regions of the same country[1]. Dental caries is a problem of both sexes and can occur at any age.

Though, not life threatening, dental caries can be a cause of intense pain and discomfort and is a financial burden for the population. This is a preventable disease, which receives a low health priority[2].

Caries prevalence is related to dietary, cultural, as well as socio-economic factors[2,3]. The carbohydrate content of the diet can be cariogenic depending upon the type of sugars present in it. There is evidence that free sugars (extrinsic sugars) in the diet are cariogenic. Of all the sugars, sucrose is considered as the "arch criminal" in the production of dental caries. Compared to other industrial workers, the confectionery workers have been reported to have a high caries experience[4,5]. An increase in the caries experience with an increase in sugar consumption has also been reported by other workers[6-8]. Animal studies have also shown a positive co-relation between sugar consumption and the severity of dental caries[9,10]. Snack foods can also be cariogenic. The processing involved in the production of snack foods as well as the nature of the flavoring agents used can influence the dental properties[10]. While the sugars can be cariogenic, fats and protein content of the diet can have a protective effect on the teeth. Fats and proteins act in a number of ways. Their presence in the diet reduce the cariogenicity of dietary sugars, probably by the physical action of accelerating the clearance of food from the mouth[11]. Fats and proteins are absorbed onto the enamel surface, thus, providing protection to the enamel[12]. A minimal fall in the plaque pH occurs after fats and protein intake compared to when sugars are consumed. This is specially true after drinking milk, because milk has a high fats, proteins, calcium and phosphate content[13,14].

In recent years an increase in the dental caries has been reported in certain developing countries. This is probably related to increased availability and consumption of refined sugars, trends towards urbanization and change to modern eating habits[1].

The present study was conducted to evaluate the relationship of diet and dental caries in the rural population. To our knowledge no such study has so far been conducted in Pakistan. Village Maghian, district Attock, was chosen for the study.

Material and Methods

Of the total 411 households of village Maghian, 102 households, were sampled by systematic random sampling procedures. Of these 102 households, only those households with the eligible subjects were chosen. The eligible subjects were described as those falling within the ages of 16 and 65 years and having at least 10 teeth in each arch. A total of 270 subjects were examined for dental caries and interviewed for the dietary habits.

A structured questionnaire was used for the purpose containing questions on age, gender, and dietary habits. Decayed teeth (DT) component of

the DMFT score was used to record the dental caries status.

For the analysis of data chi square test was used at p=.01.

Results

Table 1 and Table 2 show the frequency distribution of the study groups.

On the basis of age, a higher DT score in the older age group was seen when compared to the younger age group. The results were statistically significant (p < .01) Table 3.

Females showed a higher dental caries experience than the males. The results were statistically significant (p < .01) Table 4.

Table 1: *Distribution according to age, and gender*

Gender	Age (No. %) 16-40 years	41-65 years	Total
Male	60 (22.22)	38 (14.07)	98 (36.29)
Female	114 (42.22)	58 (21.48)	172 (63.70)
Total	174 (64.44)	96 (35.55)	270 (100)

Table 2: *Distribution of number (%) of individuals according to age, gender, and dietary habits*

Age	Gender	Taking snacks	Taking desserts
16-40 years	Male	56 (20.74)	56 (20.74)
	Female	103 (38.14)	112 (41.48)
41-65 years	Male	37 (13.70)	35 (12.96)
	Female	57 (21.11)	53 (19.62)

Table 3 *Number (%) of individuals with mean DT score according to age*

Age	No. (%)	Mean DT
16-40 years	114 (42.22)	2.37
41-65 years	89 (32.96)	4.82
		P < .01

Table 4 *Number (%) of individuals with mean DT score according to gender*

Gender	No. (%)	Mean DT
Male	67 (24.81)	2.59
Female	136 (50.37)	3.62
		P < .01

When comparison was done on the basis of dietary habits, it was seen that the individuals taking snacks had a higher DT score than the individuals not taking snacks. The individuals not taking desserts showed a higher DT score than the comparative group. The results, however, were not statistically significant (Table 5).

Table 5 *Number of individuals (%) and mean DT score according to dietary habits*

Dietary Habits	No. (%)	Mean DT
Taking snacks	196 (72.59)	3.29
Not taking snacks	12 (4.44)	2.58
Taking desserts	193 (71.48)	3.24
Not taking desserts	11 (4.07)	3.35
		P > .01

Discussion

Majority of the subjects in the present study belonged to poor socio-economic group. Socio-economic status is said to influence income, lifestyles, and diet which inturn influences the dental caries experience, but this is not necessarily a marker for assessment of caries risk in an individual[2].

The results of the present study show a high caries experience among the older age group. Luan et al[20] have also reported a similar finding with a higher caries incidence in the elderly. Low educational status[15,16], poor oral hygiene[17,18,19],lack of health awareness, lack of access to and lack of use of dental health services[16] have been attributed to a high caries experience. These might be the reasons for a high caries experience in the present study. This needs to be looked into further.

The current study shows a significant association between gender and dental caries with a higher caries experience among the females. An early tooth eruption in females or a lower educational level is said to influence the dental caries experience[16,19,21].

Approximately seventy three percent (72.59%) of the individuals in the study group were taking sweet snacks like biscuits, toffees, brown sugar (gur), and carbonated drinks. No one in the present study was taking savoury snacks. It was seen that the individuals taking snack foods had a higher caries rate, though the difference between this group and the ones not taking snack foods was not statistically significant.

The cariogenicity of diet depends upon its chemical composition, consistency and the frequency of consumption. The diets containing readily fermentable carbohydrates are more cariogenic. The high caries incidence in the present study group may be explained on the basis that this group was taking sugar containing foods, sugar is a readily fermentable carbohydrate. The study group was taking desserts as well as sweetened milk, "lassi", and sweetened tea at mealtime. The group who was taking desserts at mealtime had a lower caries experience than the comparative group. It may be pointed out that all the desserts being consumed had milk as one of its ingredients. The explanation for the low caries experience is that the desserts were being taken at mealtime when the salivary flow is at its maximum and the flushing of foods from the mouth takes place rapidly. Another explanation for the low caries experience is that milk is said to have a protective effect on the enamel because of the fats, proteins, calcium and phosphate content[12-15,20]. Dental caries is directly related to the frequency of sugar consumption rather than the total amount of sugars consumed[7,23].

We agree with Harel et al[24] that the role of sugars in the etiology of dental caries must be reviewed, taking into consideration additional factors like overall nutrition, socio-economics, education, number of meals and snacks per day, oral hygience practices, and use of preventive methods etc.

Conclusion

The present study showed a higher dental caries prevalence among the females and the older age group, as well as in those taking sweetened snack foods. This group requires special attention for the prevention of dental caries and preservation of dentition.

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ANALYSIS OF SERUM IgE LEVELS IN PATIENTS WITH ALLERGIC AND VASOMOTOR RHINITIS

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Summary

Chronic rhinorrhoea is a common problem in our society. It may be due to allergic or non-allergic conditions. IgE levels tend to increase in patients with allergic states. Present study was carried out to determine IgE levels in patients with allergic rhinitis and compare them with those in vasomotor rhinitis and healthy subjects. The study comprised of 30 patients with allergic rhinitis (based on clinical history and eosinophils in nasal smears), 30 patients with vasomotor rhinitis and 30 age and sex matched healthy subjects. These were selected from out patient departments of Mayo and Lahore General Hospital, Lahore. IgE levels in the sera of these patients were measured by ELISA technique. In the allergic rhinitis patients, mean ± SD value of serum IgE was 622.1 ± 276 IU/ml with a range of 63-1195 IU/ml. In vasomotor rhinitis group, it was 98.6 ± 43 IU/ml (range 48-292 IU/ml). While in control subjects mean ± SD was 66.2 ± 6.9 IU/ml with a range of 25-71 IU/ml. Value of IgE were significantly higher ($p < 0.001$ in allergic rhinitis patients as compared to vasomotor rhinitis and control groups. On the bases of these findings, it is concluded that measurements of IgE is a helpful tool to differentiate between allergic and vasomotor rhinitis.

Introduction

The most common non-infectious inflammatory state associated with rhinorrhoea is allergic rhinitis[1]. Immunoglobulin E (IgE) plays a central role in the production of this disorder[2,3]. This antibody represents an important defence mechanism against offending agents coming from the respiratory and gastrointestinal tract[4]. Therefore atopic individuals synthesize large amount of IgE on exposure to allergens[5]. Present study was carried out to determine levels of IgE in patients with allergic rhinitis and compare with those in vasomotor rhinitis and control subjects.

Subject and Methods

Ninety subjects were selected for the present study. Out of these, thirty were suffering from allergic rhinitis and thirty from vasomotor rhinitis. While thirty were age and sex matched healthy subjects as controls. The patients were selected from the ENT department of Mayo and General Hospital Lahore. The patients were labeled as allergic rhinitis on the basis of eosinophils in their nasal smears. The patients with at least 1 eosinophils per oil immersion field in the nasal smears were labeled as suffering from allergic rhinitis[6,7].

Five ml venous blood was drawn aseptically from each subject. The blood was transferred carefully to a centrifuge tube and allowed to clot. The tube was centrifuged for ten minutes and serum was separated. The serum was added to specimen vials, labeled properly and stored at -20 degree centigrade till analysis for IgE.

Quantitative estimation of IgE was done by ELISA technique. In the essay, required number of tubes were removed from the bag. Then samples and standards were added to tubes coated with monoclonal mouse anti-human IgE monoclonal mouse antibodies conjugated with POD) was added to all the tubes. The tubes were incubated at 37 degree centigrade for 1 hour. The tubes were washed with washing solution. After final aspiration, chromogen buffer substrate was added to all tubes and allowed to incubate for half an hour at room temperature in a dark place. Then stop solution was added and absorbance of

all the tubes was noted on a photometer at 492 nm against distilled water as blank. The concentration of IgE was calculated on the basis of absorbance values of different samples against those of zero standard and 300 IU/ml.

Results

The mean age of allergic rhinitis patients was 33 years with a range of 6 to 72 years. Mean age of vasomotor rhinitis patients was 33 years with a range from 7 to 70 years. While mean age of control subject was 31 years with a range 10 to 65 years.

In the allergic rhinitis patients group, mean ± SD of serum IgE level was 98.6 ± 43 IU/ml with a range of 48-292 IU/ml. While mean ± SD of serum IgE level in control group was 60.2 ± 6.9 IU/ml with a range of 25-71 IU/ml. The results show that serum IgE levels were significantly higher in allergic rhinitis patients ($P < 0.001$) as compared to vasomotor rhinitis and control subjects. While no significant difference in the serum IgE levels was observed between vasomoter rhinitis and control subjects (Table 1).

Table 1 *Comparison of serum IgE levels between allergic rhinitis, vasomotor rhinitis and control groups.*

Subjects	Serum IgE levels (IU/ml)	
	Range	Mean ± SD
Allergic rhinitis	63 - 1195	622.1 ± 276
Vasomotor rhinitis	48 - 292	98.6 ± 43
Healthy control	27 - 71	60.2 ± 6.9
P value		
Allergic rhinitis Vs vasomotor rhinitis		< 0.001
Allergic rhinitis Vs healthy control		< 0.001
Vasomotor rhinitis Vs healthy control		> 0.05

Discussion

Immunoglobulin E (IgE) was discovered approximately three decades ago[8]. Its production in utero is neglibible. At birth concentration of IgE is less than one IU/ml (2.4 nanogram per ml). Then onwards the levels progressively rise. At age of one year, the average value is 50 ng per ml[9].

Sensitization with an allergen causes levels of IgE to increase 3 to 12 folds. Majority of this IgE is allergen specific[10]. It has no sub-classes. It is also not capable of transfer through placenta from mother to child[11]. One percent of IgE is bound to mast cells and basophils. Binding of allergens to IgE on the surface of these cells leads to release of chemical mediators such as histamine, kinins, prostaglandins and leukotriens. These mediators produced the clinical picture of allergy[12,13].

Patients with atopic disorders, irrespective of parts of the body involved have raised IgE concentrations that are largely attributable to antibodies against inhaled allergens[14]. Therefore measurement of IgE in the serum is a useful procedure in the routine diagnosis and screaning of allergic cases[15]. It has been observed that IgE concentrations above 160 IU/ml during adolescence correlate well with positive skin test reactivity and clinical symptoms. While IgE values below 20 IU/ml almost certainly exclude the possibility of positive skin reactions and somewhat less certainly the possibility that symptoms are due to atopy[16].

In the present study, IgE mean levels in allergic rhinitis patients (622.1 IU/ml) was significantly higher than that in non-allergic patients (98.6 those of other workers[17,18]. In a study carried out on Israeli population also[19], mean IgE level in atopic group was significantly higher than in control group. Higher IgE levels in allergic rhinitis patients have been recorded by many other workers also[20,23].

Based on the previous discussion and findings in the present study, it is concluded that IgE levels are invariably increased in patients with allergic rhinitis. Therefore estimation of IgE is helpful to differentiate between allergic rhinitis and vasomoter rhinitis. Values of IgE more than 100 IU/ml definitely favour the diagnosis of allergic rhinitis in our population. Patients with vasomotor rhinitis or other non-atopic states tend to have values below 100 IU/ml. Diagnosis of allergic rhinitis in the subjects with low IgE levels should be made only in collaboration with suggestive clinical history and findings.

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SHIGELLA CARRIERS AMONG FOOD HANDLERS

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Summary

Because of the rapid evolution and adaptability of micro-organisms and changes in methods of food production, processing and storage, regulatory agencies need to develop effective microbiological control procedures. The overall effect is to make, those who produce, handle and sell food, responsible for ensuring that it is safe, fit and of the requisite quality. Those who do not meet this responsibility can be prosecuted under regulations. Different groups of food-handlers were studied to find out the carrier status of Shigella species among them. It was found that street vendors had a carrier rate of 3% while in housewives it was 2%. None among the catering staff examined were found to have Shigella species in the stool samples. All Shigella positive cases were seen in persons using non-flush toilet system. Personal and environmental hygiene play an important role to control the foodborne diseases. As the present study confirms that the food-handlers, are potential carriers of Shigella species, therefore, it is required that stool samples of food handlers should be checked by proper public health personnel to find out the presence of microbiological pathogens.

Introduction

Food-borne diseases have continued to kill or debilitate millions of people each year and remain an important cause of reduced economic productivity in both developed and developing countries[1-4].

Dysentery has been notifiable disease since 1919[5]. Shigellae are the germs which cause dysentery. Shigellae are called after Dr. Shiga[6]. Shigellosis (bacillary dysentery) is an acute infectious inflammatory colitis, being found in about 60 percent of all episodes of dysentery[1,7]. Food borne outbreaks of Shigellosis are often explosive and may be due to infected food handlers[8].

Four species of Shigellae are responsible for illness; Shigella dysenteriae (serogroup A), Shigella flexneri (serogroup B), Shigella boydii (serogroup C), and Shigella sonnei (serogroup D)[9]. There are twelve serotypes in group A. Six serotypes and thirteen subserotypes in group B. Eighteen serotypes in group C and one serotype in group D[10].

Shigella sonnei is the most common cause of Shigellosis in the industrial world, while Shigella flexneri is the most common in underdeveloped countries[11]. Man is the only reservoir of Shigella species. Dysentery is usually spread by direct or indirect contact between human beings[6,12].

Faecal-oral transmission of Shigella combined with its low infecting dose (10-200 organisms) leads not only to outbreak of illness in family groups but also to epidemics in residential institutions such as homes for the mentally retarded and day-care nurseries[1,8,13]. Incubation period of Shigella species is usually 1-3 days[14-16].

Flies and cockroaches can also act as vectors of Shigellosis[14,17,19]. A study on cockroaches collected from Services Hospital, Lahore revealed 7.4% of Shigella species in them[20].

Food-handlers may be involved in the spread of pathogens from a contaminated source of food. They may however themselves be the source of microorganisms either during the course of gastrointestinal diseases or during and after convalescence, when they no longer have symptoms[21].

Therefore the present study was planned to study various groups of food-handlers in different areas of Lahore as potential carriers of Shigella species of organisms, to assess the extent of the problem.

Materials and Methods

Stool specimens were collected from housewives, street vendors and catering staff (100 of each group), irrespective of age, sex and any gastrointestinal symptoms.

Stool samples were inoculated according to their consistency. Formed or semi-formed stool samples were mixed with sterile 0.1% peptone water to form thick suspension, and watery stool samples were inoculated as such. MacConkey agar medium, Salmonella Shigella agar medium, Xylose Lysine Deoxycholate agar medium and Selenite F-broth were used for primary inoculation. Organisms were identified by standard biochemical tests[22]. Serotyping of Shigella was carried out using immune sera (Seiken).

Results

The food-handlers included were 100 housewives, 100 street vendors and 100 catering staff. There were 200 male subjects with age range 20-60 years having a mean of 34.93 years. While 100 females included had age range from 20-60 years with mean age of 30.81 years (Table 1).

Shigella flexneri were present in 2 cases among 100 housewives while 3 cases were positive among the street vendors (1 Shigella dysenteriae, 1 Shigella flexneri and 1 Shigella sonnei) while no positive case was found in the catering staff (Table 2). All Shigella positive cases were seen in persons using non-flush toilet system (Table 3).

Table 1: *Age and sex distribution of 300 food handlers*

Group	Age	
	Range (years)	Mean±SD
Housewives (n=100)	20-60	30.8±9.07
Street Vendors (males) (n=100)	20-60	34.84±7.99
Catering staff (males) (n=100)	20-60	35.02±9.38

Table 2 *Serotypes of 5 Shigella Positive Isolates from 300 food-handlers*

Group	Shigella dysenteriae	Shigella flexneri	Shigella boydii	Shigella sonnei
Housewife (100)	0	2	0	0
Street vendors (100)	1	1	0	1
Catering Staff (100)	0	0	0	0
Total	1	3	0	1

Table 3 *Five shigella positive cases regarding toilet facility*

Groups	Non-flush Toilet		Flush Toilet	
	Positive	Percentage	Positive	Percentage
Housewives	2	2.0	–	–
Street vendors	3	3.0	–	–
Catering staff	–	–	–	–

Discussion

Public health authorities have always been deeply concerned about food borne disease in both developing and developed countries[4]. However it is difficult to be precise about the extent of illness caused by eating contaminated food[23]. The control of food borne disease requires not only surveillance of the food stuff but of the people involved in handing the food[1], because food acts as a medium which can be contaminated by an ill food handler and then the bacterias are transmitted via the food to another healthy individual[24].

Shigellosis (bacillary dysentery) is an acute infectious inflammatory colitis, being found in about 60 percent of all episodes of dysentery[1,7]. Shigella flexneri were present in 2 cases among 100 persons of the group of housewives while 3 cases were positive among the street vendors (1 Shigella dysenteriae, 1 Shigella flexneri and 1 Shigella sonnei) while no positive case was found in the catering staff (Table 2). Khan and Haleem[25] have reported 15 cases of Shigella species among 404 asymptomatic persons. They reported 2 strains of Shigella dysenteria, 8 of Shigella flexneri, 2 of Shigella boydii and 3 of Shigella sonnei, 8 among the 15 carriers of Shigella were the housewives.

Lew[26] have reported that 14% passengers and 3% of crew members had diarrhoeal illness due to Shigella flexneri, which was caused by potato salad prepared by an infected food handler. Lee et al[8] has reported that food handlers involved in preparing salad at a Michigan festival were suffering from Shigellosis and were responsible for large number of cases of gastroentritis due to Shigella sonnei. Hedberg et al[27] has also reported that food handlers on international flights were responsible for outbreaks of Shigella sonnei among the flight passengers of 13 flights. Yagupsky et al[28] have reported various outbreaks of Shigellosis in USA due to infected food handlers involved in preparation of food.

Cases and carriers have an important role to play in the transmission of Shigella[29-30]. They excrete organisms in their stool and thus provide a means of transmission through faecal oral route[30-31]. Poor personal hygiene, poor standard of living, overcrowding etc., promote the transmission of the disease[25]. All Shigella positive cases were seen in persons with non-flush toilet system (Table 3).

Because of the rapid evolution and adaptability of micro-organisms and changes in methods of food production, processing and storage, regulatory agencies need to develop effective microbiological control procedures. The overall effect is to make, those who produce, handle and sell food, responsible for ensuring that it is safe, fit and of the requisite quality. Those who do not meet this responsibility can be prosecuted under regulations.

As the present study confirms that the food-handlers, are potential carriers of Shigella species, therefore, it is required that stool samples of food handlers should be checked by proper public health personnel to find out the presence of microbiological pathogens.

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PREVALENCE OF VIRAL HEPATITIS B SURFACE ANTIGEN (HBsAg) AMONG THE GENERAL POPULATION

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Summary

A total of 400 healthy persons were tested for HBsAg by ELISA technique. A seropositivity of 7.75% was noticed with statistically insignificant higher prevalence in males (10%) as compared with female (5.5%). Surface antigenaemia was relatively higher in children (8.69%). HBsAg carriage rate was significantly higher in middle (5.59%), and lower socio-economic classes than in upper class. Insignificantly higher HBsAg reactivity was seen in Urban than in rural population. Analysis also revealed that sharing of razors tooth brushes and possibly towers were important factors in transmission of the HBV infection.

Introduction

Viral hepatitis B is well established in different populations throughout the world. The prevalence of HBsAg carrier state in apparently healthy populations is about 5-20% in many tropical and sub-tropical countries compared with 0.1-0.6% in temperate countries (Cebrese Lassie, 1983). Viral hepatitis B is endemic in most of the developing countries. Pakistan being a developing country also shares many of those problems which beset the countries of the third world. Most of the population in Pakistan is exposed at young age. Individuals who are infected with HBV develop overt symptoms of jaundice in only a small proportion and majority have sub-clinical infection. In a given population the carriers of HBsAg make a reservior with the possibility of spread to other persons. It is thus imperative to find out the over all prevalence of HBsAg in an apparently healthy population of the country (Malik et al., 1988).

The present study was planned to assess the Hepatitis B surface antigen carrier rate along with role of certain factors in its transmission in healthy population of Lahore.

Materials and Methods

This study was conducted in Lahore (The Capital of Punjab Province) at Microbiology Laboratory of Institute of Punjab Health Lahore.

This cross sectional study included a total of 400 subjects of both sexes visiting the anti-rabies Centre at Institute of Punjab Health for post-exposure prophylaxis. The stratified sampling procedure was adopted i.e., two strata based on sex were made and every 3rd person from both the strata was selected.

Each individual, was interviewed using a questionnaire to know the history of hospitalization sharing of razors, tooth brushes and towels. 5 ml of blood was drawn into vacutainers and serum separated by spinning in a centrifuge and sera stored at 20°C. All the sera then were tested by Enzyme Linked Immunosorbent Assay (ELISA) Technique. The ELISA kit manufactured by Flow Laboratories Brussels, Belgium was used; namely HEPATEK HBsAg.

The test of significance applied was chi-square.

Results and Observations

31 (7.75%) out of 400 individuals tested were found positive for HBsAg. The seropositivity on sex basis is shown in Table 1. The difference was statistically insignificant. Prevalence of HBsAg carrier-ship is depicted in Table 2 which shows higher rate in 11-20 years and lowers in 21-30 years of age groups respectively, there results also revealed that childhood antigenaemia is common in our society. The highest prevalence was

recorded in lower socio-economic group while the lowest in upper one and difference was significant ($P < 0.05$). The detail is shown in Table 3. Table 4 shows the seropositivity according to Urban and rural population break up, the difference observed was insignificant ($P < 0.05$). The relationship between HBsAg positivity and history of hospitalization is shown in Table 5. The difference of HBsAg reactivity in those with and without sharing razors (Table 6) in male population in age group of 15-50 years. 308 individuals who were inhabit of brushing their teeth showed carrier rate depicted in Table 7, a significant ($P < 0.05$) difference was seen in both the groups. Relationship between the towel sharing and HBsAg positivity was found insignificant (Table 8).

Table 1: *Sex-specific distribution of HBsAg.*

Sex Group	HBsAg		
	No. Tested	No. Positive	%
Male	200	20	10
Female	200	11	5.5

Table 2: *Age-specific distribution of HBsAg.*

Age Group (Years)	HBsAg		
	No. Tested	No. Positive	%
1-10	92	8	8.69
11-20	93	9	9.67
21-30	94	6	6.38
31-40	102	8	7.84
41-50	19	-	-

Table 3: *HBsAg Distribution According to Economic Status.*

Economic Groups	HBsAg		
	No. Tested	No. Positive	%
Upper	80	2	2.5
Middle	160	9	5.84
Lower	156	20	12.82

Table 4: *HBsAg Distribution According to Urban and Rural Population.*

Study Population	HBsAg		
	No. Tested	No. Positive	%
Urban	237	22	9.28
Rural	163	9	5.52

Table 5: *Prevalence of HBsAg in Population with and without History of Hospitalization.*

History of Hospital Admission	HBsAg		
	No. Tested	No. Positive	%
Present	88	6	6.81
Absent	312	25	8.01

Table 6: *Prevalence of HBsAg in Population with and without of Sharing Razors.*

History of Razor Sharing	HBsAg		
	No. Tested	No. Positive	%
Present	79	14	17.72
Absent	54	2	3.70

Table 7: *Prevalence of HBsAg in Population with and without History of Tooth Brushes.*

History of Sharing Tooth Brushes	HBsAg		
	No. Tested	No. Positive	%
Present	83	12	14.45
Absent	225	12	5.33

Table 8: *Prevalence of HBsAg in Population with and without History of Towels.*

History of Sharing Towels	HBsAg		
	No. Tested	No. Positive	%
Present	287	34	8.36
Absent	113	7	6.19

Discussion

The prevalence of HBsAg observed in our study was 7.75%. If we see from global point of view, this is of intermediate category. This is of higher as compared to 0.2-0.5% in Australia, Central Europe and North America but lower in comparison to reactivity of 8-20% in some parts of China, Southern Asia and Tropical Africa (Diehard and Gust, 1982). In Pakistan Khadim (1982) found a prevalence rate of 11.7% in normal medical students in NWFP. Malik et al., (1988) reported a prevalence of 5.30% in young medical students, he also quoted a caries rate of 1.4 to 4% in general population, of Northern Pakistan and 2.5% in Karachi and 2.5% in Karachi by different workers. Anwar (1990) reported HBsAg carriage rate of 6.75% in general population. The actors like over crowding, use of non-sterilized glass syringes of blood for HBsAg before transfusion contribute to the transmission of HBV infection in most of the developing countries including Pakistan (Malik et al., 1988).

In our study males tended to have higher prevalence of HBsAg as compared to females. The same has been reported by Skinhoj (1977) in Greenland; Mazzur et al., (1981) In Solomon Islands; Yadfat et al., (1982) in Israel and Gebreselassie (1983) in Ethiopia. Reason may be some sex specific behaviors or occupational activities which expose male more often to HBV. Deinhardt and Gux (1982) says that highest carrier rate is seen among children and young adults as has been revealed in our study. Khadim (1982) also noticed the highest prevalence upto 20 years of age in NWFP. Gebreselassie (1983) reported the highest rate between the age of 21-30 years in Ethiopian population.

Zuckerman (1978) and Dsinhardt and Gust (1982) state that HBsAg carriage is highest in people with poor socio-economic status and this is attributed to overcrowding in household and closeness with the cases and carriers, it may also occur due to habit of sharing of razors, tooth brushes and bath towels.

Our study revealed higher tendency of HBsAg carrier state in Urban than rural population. Sobeslavsky (1980) also noticed the same in a WHO collaborative study. This study failed to find higher HBsAg reactivity in persons with history of hospitalization. Our finding agree with that of Anwar (1990) who reported the same. According to WHO expert committee report, towns mission of HBV infection from staff to patient in rare. However it can be transmitted form patient to patient if preventive measure are not observed.

Result of our study revealed that HBsAg carriage was significantly higher in the subjects with history of sharing razors / tooth brushes than in non users. Deinhardt and Gust (1982) and Julg and Deinhardt (1988) also stated that there was considerably higher rise if contracting HBV infection by sharing razors and tooth brushes with cases or carriers. This mode of transmission can be considered important due to the fact that large number of adult males in our society visit barder shop where same unclean razors are used for shaving different customers, sharing of tooth brushes in the family is also a common practice in our society. Our finding agrees with that of Anwar (1990) that towels sharing does not constitute a significant mode of transmission of HBV infection. This funding is contrary to that of Denhardt and Gust (1982) and Goh et al., (1985) who state that HBsAg prevalence is higher in individuals with history of towel sharing than in non-shares.

EPITHELIAL CHANGES IN TRACHEOBRONCHIAL TREE OF CIGARETTE SMOKERS: AN AUTOPSY STUDY

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Summary

This autopsy based study was carried out on 75 smokers and 25 non-smokers belonging to Lahore. The subjects were male above the age of 25 years. The epithelial changes of basal cell hyperplasia, squamous metaplasia and dysplasia (atypical metaplasia) were compared in two groups. These were found in significantly high number of cases in smokers ($P<0.001$, $P<0.001$, $P<0.025$ respectively) than in non-smokers. Carcinoma in situ and / or invasive carcinoma was not detected in either of the two groups. Presence of basal cell hyperplasia, squamous metaplasia, and dysplasia in our smoker population emphasizes the need of public education about the hazards of smoking. The possible explanation for absence of carcinoma in situ and invasive carcinoma may be, the improvement in manufacture of cigarettes and introduction of filter tip cigarettes in our society over the last decade or so. An other reason may be the lack of other carcinogens which may potentiates the effects of cigarette smoke by synergistic action.

Introduction

Use of tobacco is one of the major public health challenge facing the world as it enters the twenty first century[1]. The environmental protection agency in United States recently designated tobacco smoke as class A carcinogen[2]. Smoking is the single most important cause of premature death, disease and disability among young people[3-4].

Cigarette smoke contains various respiratory irritants[5-6]. It is distributed to the lungs through the trachea, bronchi and bronchioles[7]. The respiratory mucosa is lined by pseudostratified columnar ciliated epithelium and numerous goblet cells, both of which rest on a prominent thick basement membrane[8-12]. Cigarette smoke is one of the commonest carcinogenic products of our environment[13-14].

Experimental studies suggest that particulate matter in tobacco smoke or inhaled smoke or dust of any type tends to precipitate at bifurcations in the tracheobronchial tree[15]. Therefore bronchial bifurcations may be subject to more irritation and metaplastic change than other areas of the tracheobronchial tree[16-18].

The relationship of smoking to premalignant lesions of the bronchial epithelium has been investigated primarily in animals and autopsy specimen[12]. Laboratory animals exposed to cigarette smoke develop histological changes in both upper and lower airways. Hyperplasia and squamous metaplasia of respiratory epithelium of dorsal nasal turbinates was observed in rats following exposure to side stream cigarette smoke. Inhaled cigarette smoke also induced pre-neoplastic changes in rat's tracheal epithelial cells[19].

Due to continuous or severe carcinogenic insult by tobacco smoke, the normal lining of respiratory tract is thought to undergo a variety of histological changes prior to development of carcinoma[8,11-12,20-21]. The changes include basal hyperplasia[12,16,18,20,22], squamous metaplasia[12,16,18,20-22] with increasing severity of atypia[8,11,22], and insitu carcinoma to invasive carcinoma[11-12,18].

Autopsy studies have demonstrated that histological changes in the tracheobronchial epithelium occurred far more frequently in the cigarette smokers than in non-smokers. These changes increased with the amount of cigarette smoking and among smokers increased with advancing age[12,21].

The present autopsy study was aimed to see epithelial changes in the tracheobronchial tree of cigarette smokers and to compare them with non-smokers.

Subjects and Methods

One hundred male autopsy subjects above the age of 25 years were included in the study. They were selected from the mortuary of department of Forensic Medicine and Toxicology, King Edward Medical College, Lahore. The department has been authorized to cater medicolegal autopsy work of metropolitan city of Lahore and its suburbs and works round the clock.

The subjects were selected for the study on the basis of history. Detailed history about smoking or otherwise was obtained from interviewing relatives / friends of the deceased accompanying the dead body at the time of postmortem examination. The subjects having incomplete or doubtful history were excluded from the study.

The subjects were selected irrespective of the cause of death. However the following subjects were excluded:

1. Subjects dying of any trauma to chest (e.g., firearm, crushing, stab. etc).
2. Subjects showing signs of putrefaction.

The subjects were divided into two groups.

Group I

This group included 75 male autopsy cases of smokers. The subjects were selected on the basis of having a history of smoking more than 15 pack-years. One pack-year was defined as equivalent of smoking one pack of 20 cigarettes per day for one year (e.g., one pack per day for 30 years was equivalent of smoking two packs per day for 15 years[18].

Group II

This group included 25 male autopsy cases who had never smoked in their life time.

Dissection

The dead body was opened by standard technique. The entire tracheobronchial tree was slit opened longitudinally with the help of scissors. The biopsy rates were located and the specimens were taken from six standardized sites (i.e., the carnia, the bifurcation of right upper lobe and main stem, the bifurcation of right middle lobe and right lower lobe, the medial basal bronchus of right lower lobe, the bifurcation of left upper lobe and lingula, the anterior bronchus of left lower lobe)[18].

The representative samples after processing were embedded in paraffin and sections cut at 4 μm thickness on rotary microtome. Finally they were stained with haematoxylin and eosin stain[23]. The results were statistically analysed by Chi square test.

Results

Mean proportionate basal cell hyperplasia was more in smokers as compared to non-smokers. It was statistically highly significant ($P < 0.001$) (Table 1). Similarly squamous metaplasia was observed in significantly high number of cases in

Table 1: *Comparison of Basal Cell Hyperplasia in Smokers and Non-smokers.*

Site	Smokers		Non-smokers	
	No. of Cases (N = 75)	Proportion	No. of Cases (N = 25)	Proportion
CAR	39	0.52	9	0.36
RUL	34	0.4533	9	0.36
RML	34	0.4533	7	0.28
RLL	34	0.4533	6	0.24
LUL	37	0.4933	6	0.24
LLL	34	0.4533	7	0.28
Mean proportion		0.4771 ± 0.0288		0.2933 ± 0.0546

P<0.001

Key:
CAR The carina
RUL The bifurcation of the right upper lobe and main stem
RML The bifurcation of the right middle lobe and right lower lobe
RLL The medial basal bronchus of right lower lobe
LUL The bifurcation of left upper lobe and lingula
LLL The anterior bronchus of left lower lobe

Table 2: *Comparison of Presence of Squamous Metaplasia at different Sites in Smokers and Non-smokers.*

Group	Number of cases showing presence of metaplasia at six standard sites					
	CAR	RUL	RML	RLL	LUL	LLL
Smokers (n=75)	26	21	20	22	24	17
Non-smokers (n=25)	1	2	0	0	0	0
Difference	P<0.01	0.1> P>0.05	P<0.01	P<0.01	P<0.005	P<0.025

Key:
CAR The carina
RUL The bifurcation of the right upper lobe and main stem
RML The bifurcation of the right middle lobe and right lower lobe
RLL The medial basal bronchus of right lower lobe
LUL The bifurcation of left upper lobe and lingula
LLL The anterior bronchus of left lower lobe

Table 3: *Comparison of Histological Sections showing Dysplasia in smokers and non-smokers.*

Group	Sections Positive for Dysplasia	Sections Negative for Dysplasia	Total
Smokers	15*	435	450
Non-smokers	0	150	150
Total	15	585	600

smokers at all sites (Table 2). The total number of sections positive for dysplasia in smokers were 15 out of 450, while in non-smokers no sections out of 150 sections showed displasia. The difference was statistically significant (P<0.025) (Table 3). Carcinoma in situ and / or invasive carcinoma was not detected in either of the two groups.

Discussion

The three principal types of epithelial changes observed in the present study were basal cell hyperplasia, squamous metaplasia and dysplasia (atypical metaplasia).

Auerbach et al[24] noted basal cell hyperplasia in 18.6 percent of slides in non-smokers as compared to 36.1 percent in the group smoking more than one pack daily. The difference was statistically significant (P<0.01). Subsequently, Ide et al[25] also observed that percentage of individuals exhibiting basal cell hyperplasia increased with smoking more cigarettes. In the present study there was significantly higher number of cases showing basal cell hyperplasia (P<0.001) among smokers as compared to non-smokers.

Moreover, basal cell hyperplasia was slight to moderate in extent in non-smokers and moderate to severe in extent in smokers.

Squamous metaplasia of bronchial mucosa has been recognized for many years as a common sequela of tobacco use[26-28].

In a study conducted by Auerbach et al[29] squamous metaplasia was observed in 0.25 percent of sections of non-smokers and 3.2 percent of the sections of heavy smokers. In another study conducted by Auerbach et al[24] squamous metaplasia was found in 1.9 percent of slides of non-smokers compared to 9.5 percent of those smoking more than one pack daily.

In the present study there were significantly high number of cases showing squamous metaplasia among smokers at all sites as compared to non-smokers. The results of the present study are in agreement with the observation of Gong et al[17] that prevalence of squamous metaplasia in the airways of smoking group (unlike that observed in non-smokers) suggests a causal relationship between chronic inhalation of smoke containing respiratory irritants and the development of airway lesions. This causal relationship is also supported by observation of other workers. According to investigations by Auerbach et al[15] and Auerbach et al[20] the histopathological changes in the bronchial epithelia are relatively uncommon in children and in adult non-smokers. In the present study also, non-smokers had distinctly fewer airway abnormalities than the smokers.

In the study of Peters et al[12] squamous metaplasia was noted at one or more biopsy sites in 66 out of 99 cases of heavy smokers. It was observed that squamous metaplasia occurred diffusely throughout the bronchial tree. The results of this study are in agreement with the present study, where squamous metaplasia was noted in significantly high number of cases among smokers as compared to non-smokers. Moreover, these epithelial changes were present at all the six standard biopsy sites examined in the present study.

According to Aurebach et al[21], presence of cells with atypical nuclei in a focus of metaplasia (dysplasia) is a first definite step along the road that may eventually lead to carcinoma in situ and then to invasive carcinoma.

In a study carried out by Auerbach et al[15], out of 3324 sections from non-smokers only 8 (0.2%) had lesions with atypical cells in the tracheobronchial epithelium. In contrast, in men who smoked more than one pack daily, the proportion of sections with atypical cells increased to 9.6%. This difference was calculated and was found highly significant. In the present study dysplasia was not detected in any of the sections from non-smokers. However, it was detected in 15 out of 450 sections in smokers. The difference between the two groups was found highly significant. Thus the present study as well as previous study of Auerbach et al[15] show that smokers tend to have more chances of dysplasia of their tracheobronchial epithelia as compared to non-smokers.

In a study conducted by Auerbach et al[24], definite carcinoma in situ was found in 1 percent of non-smokers as compared to 6 percent of those who smoked more than one pack daily. Te difference was statistically significant ($P<0.01$). In another study, conducted by Auerbach et al[15], the proportion of lesions composed entirely of atypical cells (carcinoma in situ) was zero percent among non-smokers as compared to 4.3 percent among smokers of 1-2 pack daily. The difference was found statistically significant ($P<0.02$). These figures show a very definite association between cigarette smoking and carcinoma in situ.

The results of the present study also differ from Auerbach et al[24] and Auerbach et al[15] as far as presence of carcinoma in situ and invasive carcinoma is concerned, because no such lesion was seen in the present study. The epithelial lesions of tracheobronchial tree observed in the present study among smokers are less advanced than carcinoma in situ.

From the studies conducted by Russel[30] and Rees et al[31], it has been concluded that, out of many harmful components of cigarette smoke, tar is probably the most lethal and is responsible for cigarette induced lung cancer.

To reduce the effects of this most harmful and lethal component of tobacco, filters were introduced in the year 1954[21]. In an experimental study conducted by Auerbach et al[21] dogs were put to inhale smoke from filter tip cigarettes and from cigarettes of the same brand without the filter. Pulmonary neoplasms were found in higher number of dogs that smoked non-filter tip cigarettes as compared to dogs that smoked filter tip cigarettes. Invasive pulmonary neoplasms were found in non-filter cigarette smoker dogs.

To observe the effect of drop in tar and nicotine content on histological changes in the bronchial epithelium of cigarette smokers. Auerbach et al[21] compared men who died during the period 1955-1960 with men who died during 1970-1977. It was observed that histologic changes of various types were found far more frequently in

the bronchial epithelium of cigarette smokers who died in the period 1955-1960 than in those who died in the period 1970-1977. This means that death rates from lung cancer were lower among men who smoked low tar / nicotine cigarettes. This observation is supported by Travis et al[32] that reduction in tar and nicotine levels in cigarette smoke over the past forty years due to use of filter tipped cigarettes, especially processed tobacco and perforated cigarette paper may have altered the types of carcinogens present in cigarette smoke and therefore, may have altered the type of histological lesions in the bronchial epithelium.

The present study could not find a single case of either carcinoma in situ or invasive carcinoma. The possible explanation for absence of these lesions may be the improvement in manufacture of cigarettes and introduction of filter tip cigarettes in our society over the last decade or so. An other reason may be the lack of other carcinogens which may potentiate the effects of cigarette smoke by synergistic action.

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CONTENTS

GUEST EDITORIAL 57

Islam and Health Care 59
Abdul Rashid Ch., M. A. Soofi And Syed Sakhawat Ali

Family Planning Knowledge and Practice (A Study in Rural Community of Punjab, Pakistan) 67
Naheed Humayun Sheikh, Shahid Mahmud, Shazia Hassan
Fayyaz Ahmad Qureshi And Tariq Humayun Sheikh

Implementing Reproductive and Child Health Priority Agenda in Punjab 71
Maqsood Ahmad, Shaheena Ayaz

Association of Chronic HBV and HDV Infection with Chronic Liver Disease. A Case Control Study 74
Capt. Ijaz Ahmed Bukhari, Mrs. Anjum Mirza, Samina Badar

Role of Fine Needle Aspiration Biopsy in the Diagnosis of Breast Lumps 79
Muhammad Latif Aftab and Asma Rashid

Leadership Issues: Outlook and Perception in An Organisation Comprising Two Different Teams 84
Khalid Ismail

Chloroquin Efficacy Against Plasmodium Falciparum, in Punjab Pakistan 87
Muhammad Saleem Rana, Syed Sakhawat Ali
Akhtar Tanveer, Ehsanullah Tarin

Dietary Habits and Dental Caries Experience in Adult Population of Village Maghian, District Attock 91
Shamta Sufia, Khalid Latif Malik

Analysis of Serum IgE Levels in Patients with Allergic and Vasomotor Rhinitis 94
Muhammad Tayyab, Pervaiz Azam Malik
Muhammad Saeed Anwar, Nasir Ahmad Chaudrhy

Shigella Carriers Among Food Handlers 98
Liaqat Ali Chaudrhy, Raheela Hussain
Nasir Ahmad Chaudrhy, M. Tayyab

Prevalence of Viral Hepatitis B Surface Antigen (HBsAg) Among the General Population 101
Capt. Ijaz Ahmed Bukhari, Samina Badar
Hafiz Muhammad Dawood

Epithelial Changes in Tracheobronchial tree of Cigarette Smokers: An Autopsy Study
Syed Shoaib Shah, Saeed Akhtar Khan
Muhammad Tayyab, Naseer Ahmad Chaudrhy, Raheela Hussain