DOCTOR'S PERCEPTION AND PRESCRIPTION OF ORAL CONTRACEPTIVES: A SOCIAL MARKETING STUDY IN BANGLADESH

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ABSTRACT

Doctor's perception of oral contraceptive products is very important for social marketing. Though the obvious and important use of oral contraceptives is to prevent unwanted pregnancy, it is also found that awareness regarding non-contraceptive health benefit use of oral contraceptives is increasing. As oral contraceptives have a lot of side effects, normally doctors go for low dose pills to avoid inconvenience and risk when prescribing a patient. In many cases, doctors give their own judgment on the basis of a number of factors in defining low dose pills. It is evident that Nordette 28 and Marvelon are considered to be almost near considering the attributes – less side effect, low dose, reasonable price and patient's preference. Femicon is separated from the rest of the group due to its low price and is perceived by the doctors as the least quality oral contraceptive. Doctors usually like to prescribe Ovostat and Marvelon to those patients who have more purchasing ability and considers price as a quality factor.

INTRODUCTION

Bangladesh, a least developed country, is burdened with its huge population (130 million with a population density of 850 per square kilometer) and its growth. This is resulting into poor quality of life of the citizens – in general, and women members – in specific. The government, non-government and international organizations are well aware of this population boom problem. At present a good number of social welfare organizations in cooperation with the government, non-governmental organizations and international agencies are involved in the family planning, reproductive and nutritional programs of the country. The purpose of these institutions is to use social marketing and supportive information, education and motivation programs to enhance the quality of life of Bangladeshi people living in rural and urban areas. They also focus on producing and marketing products and services that offer improved health and welfare benefits to the members of society.

Among such products and services, a variety of high quality non-clinical contraceptives, condoms, oral contraceptive pills, and packaged oral re-hydration

salt are available in the market. In an effort to make the price itself a motivational factor, these products are made available at highly affordable, subsidized and competitive prices. The aim is to help develop habit among low income people the use of contraceptives to lead a better quality life. In this process, both the doctors and social marketing companies understanding is important. In this respect if the companies can understand doctors perception and prescription pattern regarding the products and services they are marketing will help them in order, supply and distribution of such products. In this paper, the focus is to find out the considerations of the doctors in prescribing the different brands of oral contraceptives available in the market for social marketing of oral contraceptives in Bangladesh.

Even in oral contraceptive supply and distribution, customer segmentation is very much important. It is observed that doctors – the prescribers themselves – segregate the brands of oral contraceptives in different groups according to their ability to satisfy different customer needs. Therefore, if the marketers place and promote these brands in line with the thoughts of the physicians, it would bring them more benefits both in terms of social responsibility and financial sustainability. The study will help the social marketers to have a clear idea about the doctor's perspectives on oral contraceptives, which in turn will facilitate them to update and standardize their product line for a better achievement and response from the community market.

RESEARCH OBJECTIVES

Keeping the above context in mind the main objective of the study is set to find out doctors' perception towards different aspects related to the use of oral contraceptives. Specifically this study will look into (a) reasons for recommendations of oral contraceptives by the doctors, (b) doctors' quality perception about different brands of oral contraceptives, and (c) factors influencing doctors' advising a particular brand.

METHODOLOGY

The research is mainly exploratory in nature. Information was collected through a pre-designed questionnaire. As a convenience sampling a total of one hundred (100) doctors were interviewed in four major cities of Bangladesh: 50 from Dhaka City, 30 from Chittagong and 10 each from Khulna and Rajshahi metropolitan cities. The respondents were selected purposively. The main selection criteria of these doctors were: (a) at least an MBBS degree or its equivalent approved by Bangladesh Medical and Dental Council, (b) being

engaged in practicing medicine, and (c) advising and/or prescribing oral contraceptives at the time of conducting the study.

The study made use of sophisticated statistical tools to strengthen its findings. Other than simple frequency distribution and bi-variate contingency table, the study made use of 5-point Likert scale to determine quality perception of the brands. To further analyze the findings of mean preference score for different quality dimensions (i.e., less side effect and acceptability of the brands to the patients), statistical measures like analysis of variance (ANOVA) and Tukey's critical value were used. Finally a correspondence analysis tool is used to measure the relationship between the factors that influence the doctors to prescribe a certain brand of oral contraceptive.

DOCTOR'S PERCEPTION OF ORAL CONTRACEPTIVES

Reasons for Recommendations of Oral Contraceptives

There are a number of reasons noted to recommend oral contraceptives by the physicians. The seven major reasons identified for which doctors usually recommend oral contraceptives is shown in Table 1.

TABLE 1
REASONS OF ORAL CONTRACEPTIVE RECOMMENDATION

Reasons	Response (%)
1. Birth control	33
2. Dysmenorrhea (difficulty in menstruation)	28
3. Irregular menstruation	14
4. Anemia due to blood loss	10
5. For abnormal menstrual bleeding	6
6. For excessive menstrual bleeding	5
7. Salpingitis (infection of fallopian tubes)	4
Total	100

The study noted that in only 33% cases doctors advise oral contraceptives for birth control purposes, but the rest 67% of the cases the doctors recommend to use oral contraceptive are other non contraceptive health benefits. The main other use of pills are for treatment of dysmenorrhea (28%). The doctors are also found to prescribe oral contraceptive to cure or allay menstrual infirmities of their patients, e.g., to regularize menstruation (14%), cure anemia (10%), reduce the abnormal menstrual blood (6%), and help excessive loss of menstrual blood (5%). Only 4% doctors administered oral contraceptives for *salpingitis* to cure infection of fallopian tubes.

Though the obvious and important use of oral contraceptives is to prevent unwanted pregnancy, but these have also some additional health benefits. It is found that awareness about non-contraceptive health benefit use of oral contraceptives are also increasing. It can be mentioned here that the contraceptive pills' packets contain a number of vitamin and iron tablets. It is observed that the doctors are well aware of these additional pills, which are good source of iron and vitamin and this awareness is reflected in their advice and prescription.

Perception of Low Dose Pill

As oral contraceptives have a lot of side effects, normally doctors go for low dose pills to avoid inconvenience and risk when prescribing a patient. Thus knowing about doctors' perception regarding low dose pill, especially how the doctors generally define them, is very important.

When the doctors were asked to define low dose pill, the responses were as follows (Table 2).

TABLE 2
DOCTORS' RESPONSES ABOUT LOW DOSE PILL

Perception about low dose pill	%
Lower level of estrogen & progesterone (female sex hormones)	44
Less side effect	28
Estrogen level < 50 mg & Progesterone level is ≤1.5 mg	28
Total	100

As observed the doctors are divided in their opinions as to the definition of low dose pills. About 44% doctors define low dose oral contraceptives as those, which has lower level of estrogen and progesterone hormones because the dose depends upon the level of these two hormones. It is worth noting that these 44% doctors are not specific in defining lower level. Again another 28% doctors think that low dose oral contraceptives are those that cause less side effect to its user due to its lower level of hormones. But the rest 28% doctors could define the low dose pill in a perfect term. These 28% doctors define the low dose pill as contraceptive with estrogen level less than 50 mg and progesterone level less than or equal to 1.5 mg, which is the medical definition of low dose pill. Hence, we can conclude that in many cases doctors' give their own subjective judgment in prescribing low dose pills. Hence, while recommending contraceptives to a patient a number of factors influence the doctors.

Quality Perception of Different Oral Contraceptive Brands

Quality has no unique definition. Normally quality is considered to be meeting or exceeding customer satisfaction. The study found that the users of contraceptives are mainly concern about its side effects (e.g., hypertension, weight gain, breast cancer, etc.) and non-acceptability to their body (nausea, vomiting, headache, insomnia, etc.). Hence, in the study we have considered these two quality dimensions for different brands of contraceptives available in the market.

The four most common contraceptives available in the market are (1) Marvelon, (2) Nordette 28, (3) Ovostat and (4) Femicon. A cross quality comparison among the four brands – Marvelon, Nordette 28, Ovostat and Femicon – was carried out in terms of (a) less side effect and (b) acceptability to patients. A 5-point Likert scale (1 → least and 5 → most) was used to determine quality perception of the brands. To further analyse the findings of mean preference score for less side effect and acceptability of the brands to the patients, statistical measures, like ANOVA and Tukey's critical value were used. The results of each of them are shown below.

Side Effect

Mean Preference Score

The Table 3 summarizes the results with respect to less side effects. It is noted that, Nordette 28 (1.59) and Marvelon (1.61) seems to have least side effects as perceived by the doctors, whereas, Ovostat (2.04) and Femicon (2.21) are found to have comparatively more side effects. Note that absolute value wise none of the figures are much on the higher side but here comparisons are made in a relative scale.

TABLE 3
MEAN PREFERENCE SCORE OF LESS SIDE
EFFECT FOR DIFFERENT BRANDS

Brands	Mean score (1 – 5 scale)*
1. Nordette 28	1.59
2. Marvelon	1.61
3. Ovostat	2.04
4. Femicon	2.21

* 1 → least side effect & 5 → most side effect

Cross Quality Comparison

i. Analysis of Variance (ANOVA)

To check if the means are different or not, the one way analysis of variance summarizes ANOVA result regarding less side effects (Table 4). As calculated value [$F_{0.95\ (3,\ 396)}$ = 18.7448] is larger than the critical value at 95% confidence level (2.60), it can be concluded that the means are different at a level of significance α = 0.05. Nordette 28 has the lowest mean (1.59), followed by Marvelon (1.61).

TABLE 4
ANOVA RESULTS FOR LESS SIDE EFFECT

Brand name	Mean response	Source of variation	Sum of square	Degrees of freedom	Mean square	F-Ratio
Femicon	2.21	Between response	29.0275	3	9.6758	18.744
Ovostat	2.04					
Marvelon	1.61	Within response	204.41	396	0.5162	
Nordette 28	1.59					
		Total	233.4375	399		

ii. Tukey's W Procedure

Tukey's W procedure is applied as the multiple comparison procedure to find out which means of the treatments differ significantly from which ones. The calculations are shown below (Table 5).

Tukey's critical value = $q_{0.95,\ 3,\ 396}$ = $(WMS/k)^{1/2}$
WMS = Within Mean Square = 0.5162
K = number of observations within a sample = 100
So, the calculated Tukey's critical value = 0.071846

TABLE 5
COMPARISON OF TUKEY'S CRITICAL VALUE AGAINST DIFFERENT BRANDS

Brand name	Means (X_c)	$X_c - X_n$	$X_c - X_m$	$X_c - X_o$
Femicon (X_f)	2.21	0.62	0.6	0.17
Ovostat (X_o)	2.04	0.45	0.43	
Marvelon (X_m)	1.61	0.02		
Nordette 28 (X_n)	1.59			

Comparing the differences in the above table with the critical value 0.071846, the only hypothesis H_o: $\mu_{marvelon} = \mu_{nordette}$ is accepted. So it can be concluded that doctors have the same quality perception about Marvelon and Nordette 28 in terms of less side effect. The lowest mean values of these two brands suggest that these brands have better quality perception to doctors compare to Ovostat and Femicon. Doctors perceived Femicon as the oral contraceptive with least quality among these four brands in terms of less side effect.

Acceptability

Mean Preference Score

The following Table 6 shows brands with mean acceptability preference score. Regarding acceptability of brands, it is found that Nordette 28 (1.78), and Marvelon (1.79) are the most acceptable brand among the four. They have almost the same acceptability. These are followed by Ovostat (2.19), and Femicon (2.55).

TABLE 6
BRANDS WITH MEAN ACCEPTABILITY PREFERENCE SCORE

Brands	Mean score (1 – 5 scale)*
1. Nordette 28	1.78
2. Marvelon	1.79
3. Ovostat	2.19
4. Femicon	2.55

* 1 → most acceptable & 5 → least acceptable

Cross Quality Comparison

i. Analysis of Variance (ANOVA)

The one-way analysis of variance table for acceptability to patients summarizes ANOVA results in Table 7. As calculated value [$F_{0.95 (3, 396)}$ = 29.8684] is larger than the critical value at 95% confidence level (2.60), it can be concluded that the means are different at a level of significance $\alpha = 0.05$.

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TABLE 7
ANOVA RESULTS FOR ACCEPTABILITY TO PATIENTS

Brand name	Mean response	Source of variation	Sum of square	Degrees of freedom	Mean square	F-Ratio ($\alpha = 0.05$)
Femicon	2.55	Between response	40.7075	3	13.5692	29.8684
Ovostat	2.19					
Marvelon	1.79	Within response	179.89	396	0.4543	
Nordette 28	1.78					
		Total	220.5975	399		

ii. Tukey's W Procedure

Tukey's W Procedure for multiple comparisons is used to find out the interrelation among the mean of rate responses, specifically, to find out which means of the treatments differ significantly from which ones. The calculations are shown below (Table 8).

Tukey's critical value = $q_{0.95, 3, 396}$ = $(WMS/k)^{\frac{1}{2}}$
WMS = Within Mean Square = 0.4543
K = number of observations within a sample = 100
So, the calculated Tukey's critical value = 0.0674

TABLE 8
COMPARISON OF TUKEY'S CRITICAL VALUE AGAINST
DIFFERENT BRANDS

Brand name	Means (X_c)	$X_c - X_m$	$X_c - X_n$	$X_c - X_o$
Femicon	2.55	0.77	0.76	0.36
Ovostat	2.19	0.41	0.4	
Nordette	1.78	0.01		
Marvelon	1.79			

Comparing the differences in the above table with the critical value 0.0674, the only hypothesis H_o: $\mu_{nordette} = \mu_{marvelon}$ is accepted. So it can be concluded that doctors have the same quality perception about Marvelon and Nordette 28 in terms of acceptability to patients. The lowest mean values of these two brands suggest that these brands have better quality perception to doctors compare to Ovostat and Femicon.

In summary we can say that the doctors perceive both Nordette 28 and Marvelon as oral contraceptives of same quality in respect of less side effect and

acceptability to patients. Doctors perceived Femicon as the oral contraceptive with least quality among these four brands in terms of acceptability, as well as, side effect.

Factors That Influence Doctors to Prescribe/Advice a Particular Oral Contraceptive

A correspondence analysis tool is used to measure the relationship between the factors that influence the doctors to prescribe a certain brand of oral contraceptive. In the study as many as nine factors were identified which doctors have mentioned as reasons that influence them to prescribe particular brands of oral contraceptives. These are: (1) less side effect, (2) patients' preference, (3) low price, (4) low dose, (5) reasonably effective, (6) reasonable price, (7) high dose, (8) status due to high price, and (9) mini pill. The bi-variate contingency relationship between the commonly used brand names that doctors usually prescribe/advice and reasons behind their choices are shown in Table 9.

TABLE 9
RELATIONSHIP BETWEEN DOCTOR'S CHOICE OF A BRAND AND REASON OF CHOICE

Brand name	Less side effect	Patients' prefer-ence	Low price	Low dose	Reason-ably effective	Reason-able price	High dose	Status due to high price	Mini pill	Total
Marvelon	12	7	1	1	–	6	–	5	–	32
Nordette 28	6	8	1	3	–	6	–	–	–	24
Femicon	2	–	26	–	–	–	–	–	–	28
Ovostat	1	–	–	–	2	–	5	2	–	10
Nordette*	1	–	–	–	–	–	–	3	–	4
Postinor	–	–	–	–	–	–	–	–	1	1
Diane 35	1	–	–	–	–	–	–	–	–	1
Total	23	15	28	4	2	12	5	10	1	100

* Nordette is different from Nordette 28. Nordette 28 is an updated version of Nordette.

From the table it can be seen that the four brands (e.g., Femicon, Marvelon, Ovostat and Nordette 28) are accounted for 94% of responses. The rest three are not prescribed much by the doctors. Similarly, there are two factors (mini pills and reasonably effective) are found less considered by the doctors while advising. The other seven important factors (less side effect, patients' preference, low price, low dose, reasonable price, high dose, status due to high price), are found to be accounted for 97% of the response. In order to use the correspondence analysis, these four prominent brands and seven principal factors were selected. With these four brands and seven factors 92% of total responses are explained (Table 10).

TABLE 10
RELATIONSHIP BETWEEN SELECTED BRANDS AND THE SELECTED REASONS

Brand name	Less side effect	Patients' preference	Low price	Low dose	Reasonable price	High dose	Status due to high price	Total
Marvelon	12	7	1	1	6	–	5	32
Nordette 28	6	8	1	3	6	–	–	24
Femicon	2	–	26	–	–	–	–	28
Ovostat	1	–	–	–	–	5	2	8
Total	21	15	28	4	12	5	7	92

Following row profile Table 11 shows the contribution of each factor to the brands and the total inertia. Total inertia measures the percentage of total attributes explaining each brand. The table manifests the response percentage of factors regarding each brand and the major findings in this regard are:

- High dose factor is related to Ovostat only.
- Less side effect, patients' preference, low dose and reasonable price – these four factors explain the reason of prescribing Marvelon and Nordette 28.
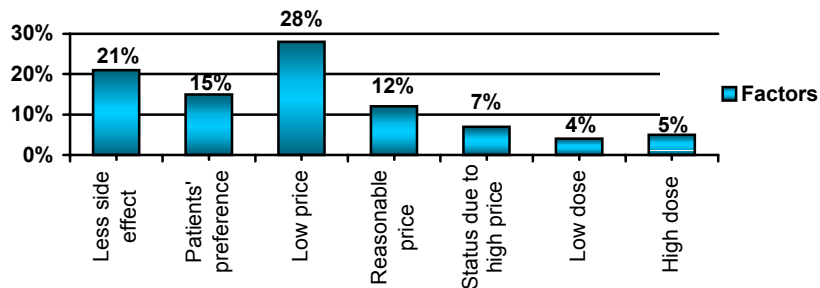- Femicon is largely prescribed for its low price.

TABLE 11
ROW PROFILE SCORES FOR PRESCRIBING ATTRIBUTES

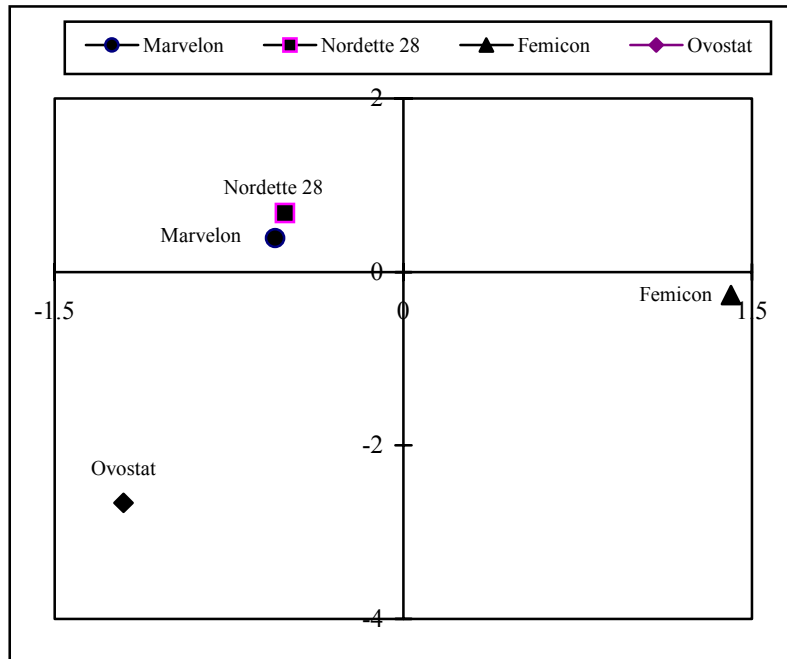| Brand name	Less side effect	Patients' preference	Low price	Low dose	Reason-able price	High dose	Status due to high price	Total inertia
Marvelon	0.375	0.219	0.031	0.031	0.188	0.000	0.156	0.214
Nordette 28	0.250	0.333	0.042	0.125	0.250	0.000	0.000	0.217
Femicon	0.071	0.000	0.929	0.000	0.000	0.000	0.000	0.285
Ovostat	0.125	0.000	0.000	0.000	0.000	0.625	0.250	0.284

Figure 1. Position of brands according to the factors

Figure 1 depicts the position of these four brands in relation to the factors that describe them. From the figure it is ostensible that:

- Marvelon and Nordette 28 are very close to each other according to attributes that describe them. The row profiles (Table 11) show that low dose, less side effect, patients' preference and reasonable price – these four factors describe about 28.3% of Marvelon's characteristics and 25% characteristics of Nordette 28.

- Ovostat and Femicon are relatively far apart from each other and also from Marvelon/Nordette 28 group. Their relative positions as points in the two-dimensional space indicate the similarities and differences among them with respect to the attributes of which doctors like to prescribe or recommend them to their patients. First dimension separates Ovostat and Femicon into two different quadrants. So these two brands are totally different in terms of attributes that has described them.

- Doctors usually like to prescribe Femicon because of its very low price compare to other contraceptive brands.

- Similarity in two factors (less side effect and status due to high price) positioned Ovostat at the same side of Marvelon/Nordette 28 group related to second dimension, but second dimension separates Ovostat from Marvelon/Nordette 28 group due to the dissimilarity in other five factors.
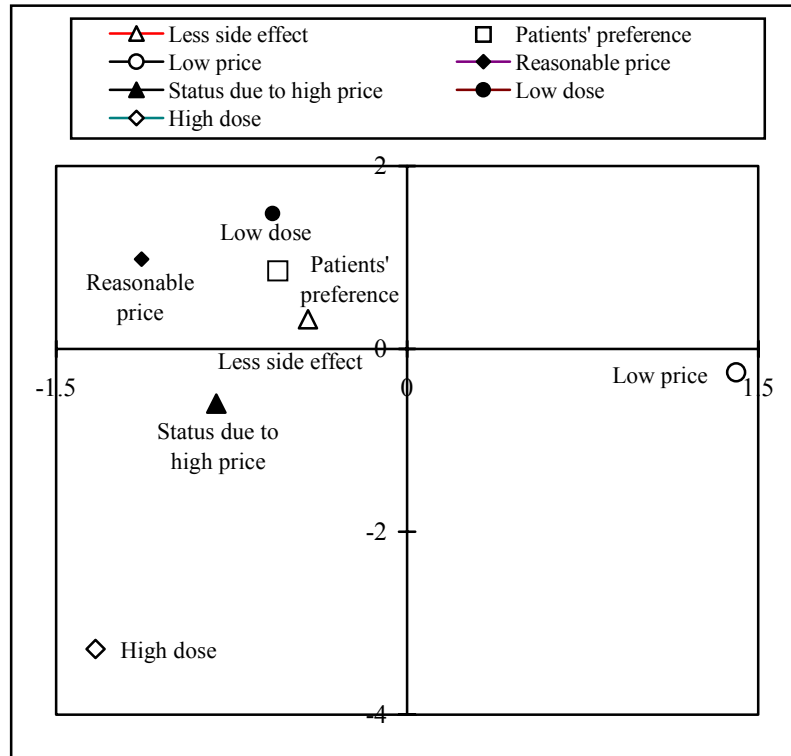

Figure 2. Position of factors according to the brands

Figure 2 shows the inter-correspondence relationship between seven attributes. It is clear from the figure that:

- Low dose, reasonable price and patients' preference – these three factors have coincided each other at the same point.

- First dimension separates factor low price from rest of the factors, as this factor describes only one brand – Femicon.

- Two factors – status due to high price and less side effect positioned near to each other but separated by first dimension as these two factors describe the majority portion of Ovostat and a very little of Marvelon.

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It is because of the geometric correspondence of the two sets of points, in position and inertia, that make it possible to merge the two displays into one joint display (Figure 3). The advantage of this merger is that a concise graphical display representing varied features of the data is obtained in a single picture.
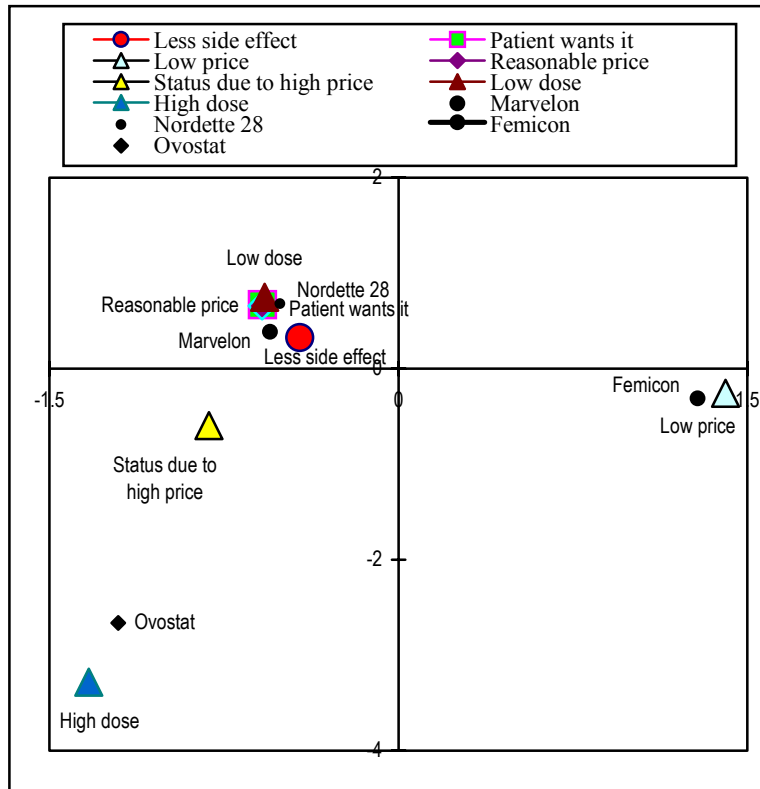

Figure 3. Joint position of brands with respective attributes

Geometrically, a particular brand will tend to a position in its space corresponding to the attribute categories prominent in that brand profile. Similarly, given the display of brand profiles, a particular attribute category will tend along the principal axes in the direction of the brands that are relatively substantial in that category. There is no point near the center of the display that might have undifferentiated profile distribution as a consequence of the origin placed at the center. From the joint display of the correspondence analysis, it is evident that:

- Nordette 28 and Marvelon are considered to be almost near considering the attributes – less side effect, low dose, reasonable price and patients'

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preference. These four factors are the attributes for which doctors usually prescribe Marvelon and Nordette 28 to their patients.

- Femicon is separated from the rest of the group due to its low price. Low price attribute only explain the reason of prescribing this brand. So, brand and attribute have coincided at a single point.

- Ovostat has positioned in between the two attributes that stand for this brand. Doctors usually like to prescribe Ovostat and Marvelon to those patients who have more purchasing ability and considers price as a quality factor. These groups of patients expect more attention and quality medicine from their physician. So, status due to high price factor stands both between Ovostat and Marvelon. As doctors mentioned this factor in more instances as a reason to prescribe Ovostat compare to Mervelon, this factor has its position at the fourth quadrant with Ovostat, but still near the Marvelon.

CONCLUSION

The study of oral contraceptives preference by the doctors is mainly exploratory in nature. Information was collected from 100 practicing doctors from four major cities of Bangladesh through a predesigned questionnaire. The study noted a number of reasons to recommend oral contraceptives by the physicians. Though the obvious and important use of oral contraceptives is to prevent unwanted pregnancy, it is found that awareness about non-contraceptive health benefit use of oral contraceptives are also increasing. The study noted that in only 33% cases doctors advise oral contraceptives for birth control purposes, but the rest 67% of the cases the doctors recommend to use oral contraceptive for other non contraceptive health benefits, such as treatment of dysmenorrhea (28%), regularize menstruation (14%), cure anemia (10%), reduce the abnormal menstrual blood (6%), help excessive loss of menstrual blood (5%). About 4% doctors administered oral contraceptives to cure infection of fallopian tubes.

As oral contraceptives have a lot of side effects, normally doctors go for low dose pills to avoid inconvenience and risk when prescribing a patient. As observed, the doctors are divided in their opinions as to the definition of low dose pills. About 44% doctors consider low-dose oral contraceptives as those, which has lower level of estrogen and progesterone hormones because the dose depends upon the level of these two hormones. About 28% doctors think that low dose oral contraceptives are those, which causes fewer side effects to its user. But the rest 28% doctors define the low dose pill in a perfect medical term as "contraceptive with estrogen level less than 50 mg and progesterone level less

than or equal to 1.5 mg." Hence, we can conclude that in many cases doctors give their own judgment in prescribing low dose pills. Hence, while recommending a number of factors influence the doctors.

A cross quality comparison among the four most popular brands – Marvelon, Nordette 28, Ovostat and Femicon – was carried out in terms of less side effect and acceptability showed that, Nordette 28 and Marvelon seems to have least side effects and more acceptability as perceived by the doctors; whereas, Ovostat and Femicon are found to have comparatively more side effects and less side effects. It is further noted that doctors have the same quality perception about Marvelon and Nordette 28 in terms of less side effect and acceptability. Doctors perceived Femicon as the least quality oral contraceptive among these four brands in terms of less side effect and acceptability.

The contribution of each of the seven most important factors (less side effect, patients' preference, low price, low dose, reasonable price, high dose, status due to high price), which doctors have mentioned as reasons that influence them to prescribe particular brands of oral contraceptives, to the commonly used brands that doctors usually prescribe/advice (Femicon, Marvelon, Ovostat and Nordette 28) reveals that high dose factor is related to Ovostat only. Less side effect, patients' preference, low dose and reasonable price – these four factors explain the reason of prescribing Marvelon and Nordette 28; whereas, Femicon is largely prescribed for its low price. It is noted that Marvelon and Nordette 28 are very close to each other according to attributes that describe them, and Ovostat and Femicon are relatively far apart from each other and also from Marvelon/ Nordette 28 group. With respect to less side effect and status due to high price, Ovostat is similar to Marvelon/Nordette 28 group, but regarding other five factors they are dissimilar.

The inter correspondence relationship among seven attributes reveals that the three factors – low dose, reasonable price and patients' preference – have coincide each other at the same point, and low price is found distinctly separate from rest of the factors. The two factors – status due to high price and less side effect – positioned near to each other as these two factors describe the majority portion of Ovostat and a very little of Marvelon. From the joint display of the correspondence analysis, it is evident that Nordette 28 and Marvelon are considered to be almost near considering the attributes – less side effect, low dose, reasonable price and patients' preference. These four factors are the attributes for which doctors usually prescribe Marvelon and Nordette 28 to their patients. Femicon is separated from the rest of the group due to its low price, and doctors usually like to prescribe Ovostat and Marvelon to those patients who have more purchasing ability and considers price as a quality factor. These

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groups of patients expect more attention and quality medicine from their physician.

Even in oral contraceptive market, customer segmentation is very much present. From survey, it is clearly evident that doctors, the prescribers themselves, segregate the leading four brands of oral contraceptives in three different groups according to their ability to satisfy different customer needs. Therefore, if the marketers place and promote these four brands in line with the study findings, it would bring them more benefits.

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