

Title: The Impacts of Educational Intervention on Drug rescription
of Physicians Working in Health and Treatment Centers Supervised
by Tehran University of Medical Sciences: A Study Based upon
WHO Indices

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Abstract

Making efforts for developing a scientific and reasonable pharmaceutical system is among the most important goals of any health systems all over the world. One of the main tasks of the authorities in charge of health and treatment issues in any given society is to make reasonable the prescription and consumption of drugs on the basis of indices announced by WHO. The present study is of intervention type being devised to be done in two phases. Firstly, the status of drug prescription by physicians and practitioners

working in the health and treatment centers supervised by Tehran University of Medical Sciences are described in terms of WHO indices (including “the average number of the drug items prescribed”, “the percentage of prescriptions consisting of at least one item of anti-biotic drugs”, and “the percentage of prescriptions consisting of at least one item of injection drugs”) for the Fall 2008. In the second phase, preceded by an educational intervention program, the indices of drug prescription have again been extracted for the same season of the next year. In the end, the mean quantities of each of pre/post intervention indices were compared through a paired t test in a SPSS 17 context. The comparison between WHO indices before and after educational intervention indicates no significant difference between the indices in question. Since there is no monitoring system for controlling the physicians’ behaviors or for controlling the feedbacks, it is not possible to conclude that educational intervention is effective on the values of the three indices in question. The existence of a database in which all prescriptions of the physicians are collected would enable us to develop more efficient and purposeful educational programs.

Keywords: Drug prescription, anti-biotic, injection drugs, Focus Group Discussion

1. Introduction

One of the main responsibilities of authorities in charge of health and treatment issues in any given society is to make reasonable the prescription and consumption of drugs because unreasonable prescription and consumption of drugs is a very important problem interfering with treatment. In addition to a failure in treatment and an increase in the probability of the emergence of other diseases, a high per capita consumption of drugs will lead to the waste of the society's economic resources. Due to various reasons, many people assume that treatment is only possible through using drugs and even in some cases they confine it to a particular form of drug consumption such as using injection pharmaceutical items. Such people ask their physicians insistently to provide them with injection drugs or request for certain drugs they think they might be more effective in the treatment of their diseases. Such an attitude towards fighting against diseases compels the physician involved to prescribe so many pharmaceutical items which in turn would certainly result in a considerable increase of drugs consumption. Findings of a research work indicate that the prescription and consumption of drugs in Tehran does not follow a scientific approach. According to the results of this research having done in the year 1998, the average number of pharmaceutical items of each prescription has been estimated as 3.6; 43% of the prescriptions have included anti-biotic drugs and 39% of them have included injection drugs (Dinarvand and Nik Zad, 1999). Another research work in the year 1999 focusing on the average number of pharmaceutical items prescribed by general practitioners in Babol township shows that the average number of items prescribed in any prescription has been 4.5 items, and that in 30.4% of the prescriptions, there have been mismatches between the drugs prescribed. Moreover, the above-mentioned research shows that 61.9% of all prescribed drugs have been anti-biotic items while 58.4% of them have been injection drugs (Moghaddamnia et al., 1999). Another study which has been done in 2004 focusing on a sample of 4190 prescriptions recorded in the pharmacies of health and treatment centers supervised by Tehran University of Medical Sciences shows that the average number of the items prescribed has been 2.58 whereby 62.39% of the prescriptions consist of at least one anti-biotic item whereas 28.96% of them include at least one injection drug item [Mosleh et al., 2007]. The average number of the drug items prescribed in 2003 in Kerman was 3.43% and the percentage of prescriptions consisting of at least one item of anti-biotic and injection drugs were 33.95% and 42.4%, respectively. (Sepehry et al., 2005)

The results of another study which has been done in Jahrom township in the year 2006 indicate that the average pharmaceutical items prescribed in this city has been 2.38 items per each prescription (Shayan and Shayan, 2007).

While in the developed countries, the number is 1.5, the average number of pharmaceutical items prescribed in Iran is 3.6 items per prescription, the percentage of prescriptions consisting of at least one item of anti-biotic drugs and the percentage of prescriptions consisting of at least one item of injection drugs are 43% and 39%, respectively, [MHME, 1998]. Particularly, drug consumption by the Iranian adults

is much more than that of the adults in developed countries (Davati et al., 2007). The per capita number of drug consumption in Iran has increasingly changed from 145 in the year 1981 to 275 in the year 1998 indicating a growth of 190% which creates serious concerns about unreasonable consumption of drugs in Iran [MHME, 1998].

According to the statistics of WHO in the year 1993, the average number of pharmaceutical items prescribed in some selected countries have been as follows: Ecuador (1.3), Nepal (2.1), Nigeria (3.8), Tanzania (2.2), Bangladesh (1.4), India (3.3), Sudan (1.4), and Yemen (1.5); while the percentage of prescriptions including anti-biotic items in the above countries has been 43%, 27%, 48%, 39%, 63%, 43%, 31% and 46%, respectively. In addition, the percentage of prescriptions including injection items for the same countries has been reported as being 17%, 5%, 37%, 27%, 0.2%, 17%, 36%, and 25%, respectively [WHO, 1993]. Such findings necessitate being more attentive to the issue of education and training in order to intervene in the prescription of drugs by physicians. In Iran, the medical societies' continuous training programs have considerably developed since 1991 (Hosseini and Nooshiravan poor, 2000). A main task, however, is to study the impacts of such programs on the improvement of knowledge and performance of the country's medical society members as well as their impacts on the improvement of prescription and consumption of drugs throughout the society. The results of a research work which having focused on the prescription behavior of general practitioners working in the western north region of Tabriz city shows that after receiving an educational intervention program, there has been no difference between pre/post intervention behaviors of the trained and untrained groups with regard to WHO indices of drugs prescription and more interestingly, there has been no difference in the prescription behavior of the trained group members before and after the educational program (Gorjani et al., 2005). Another study carried out in Shiraz township showed that although the training did not significantly decrease the amount of antibiotics prescribed, the amount of prescribed antibiotics before training was 47.3 and was 46.4 after training, but it could significantly reduce the percentage of prescriptions consisting of at least one item of injection drugs from 58.8% to 53%. (Zare et al., 2007)

In contrast, the findings of another research being done in Ardebil province for the period 1999-2004 indicate that feedback-oriented educational activities have had a significant impact on the current trends of prescription and consumption of drugs (Me'mari, 2004).

The present study aims to explore the status of drugs prescription by physicians before and after educational intervention, taking into consideration the WHO drug prescription indices.

2. Materials and Methods

First of all, having in mind the instructions recommended by WHO, a sample of 840 prescriptions (including both insured and free prescriptions on an average of 10 prescriptions per month) were selected from the pharmacies of 28 health and treatment centers supervised by Tehran University of Medical Sciences in order to gather the data indicating the status of drug prescription by physicians working in these centers in the Fall 2008 (the data being supposed to be consisting of "the number of pharmaceutical items prescribed", "the percentage of prescriptions including at least one anti-biotic item", and "the percentage of prescriptions including at least one injection item"). Then, for the purpose of educational intervention aimed at correcting and improving the physicians' prescription behavior, the attitudes and viewpoints of a selected number of the target group members (i.e. the physicians working in the health and treatment centers in question) were collected through a Focus Group Discussion (FGD) approach. After that, on the basis of the above-mentioned considerations, a training workshop was devised and held with the presence of all physicians working in the centers under investigation with the aim of correcting and improving their prescription behavior.

In the second phase, preceded by an educational intervention program, the aforementioned indices of drugs prescription were gathered once more for the same season of the next year (2008).

The average values obtained from research subjects for each of the indices in question before and after educational intervention were compared through a paired t test in the context of SPSS 17 software.

3. Results

Table 1 presents the mean and standard deviation of the dependent variables including the number of prescribed items, the percentage of prescriptions including at least one anti-biotic item, and the percentage of prescriptions including at least one injection item for all the health and treatment centers supervised by Tehran University of Medical Sciences in the years 2008 and 2009 (before and after educational intervention).

(Table 1)

Table 2 presents the mean comparisons resulted from paired t test analysis of number of the prescribed items, the percentage of prescriptions including at least one anti-biotic item, and the percentage of prescriptions including at least one injection item both before and after the educational intervention program in the pharmacies in question

(Table 2)

The average numbers of the items prescribed for the periods before and after intervention have been 3.04 and 3.14, respectively while it has been 2.85 for the year 2004. It is worth mentioning that the average number of the prescribed items resulted in this study has been less than that of the whole country (3.6). Thus, on the basis of the results obtained, it cannot be claimed that there is a significant difference between the values calculated for the aforementioned index for the periods before and after intervention (P-value = 0.31).

As for the percentage of prescriptions including at least one anti-biotic item, the values obtained for the periods before and after intervention have been 64.89% and 59%, respectively while that of the year 2004 has been 62.3%. On the basis of these results, again, one cannot claim that there is a significant difference between the values calculated for the aforementioned index for the periods before and after intervention (P-value=0.13).

And finally, with regard to the percentage of prescriptions including at least one injection item, the values obtained have been 35.88% and 33.12% for the periods before and after the intervention, respectively. Once again, it cannot be claimed that there is a significant difference between the values calculated for the above-mentioned index for the periods before and after intervention (P-value=0.45).

4. Discussion

The findings of this study show that educational intervention cannot affect the three indices in question (i.e. "the average number of the prescribed items", "the percentage of prescriptions including at least one anti-biotic item", and "the percentage of prescriptions including at least one injection item") in all health and treatment centers under investigation. The intended method for correcting the physicians' attitudes towards drug prescription (holding group discussion sessions) was of no sufficient efficiency and the implementation of the above-mentioned approach did not lead to the intended behavioral aim. This finding is in line with that of the research work done in Tabriz western centers in which the same method has been used (Gorjani et al., 2005).

5. Conclusion

Thus, it seems necessary to develop new alternative methods or to combine the present method with other alternative methods for the purpose of correcting the physicians' attitudes towards drug prescription. According to the findings of the research done by Ardebil Education Committee(Me'mari), training programs will be effective providing that they are purposeful and feedback-oriented so that the information of all prescriptions are recorded in the computers whereby any particular physician or practitioner has his/her own profile. The aforementioned information can also be gathered through the development of specific software to be used by pharmacies. In that way, it will be possible to describe the prescription behavior of any of the physicians involved and to compare his/her prescription indices with the acceptable national standards of prescription and consumption of drugs thorough making use of summarized forms and

tables. The existence of such information enables the authorities in charge of drugs sector to improve the management of their educational and training programs and to devise successful plans for future.

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Table 1. Description of Information Collected from Prescriptions in all Centers.

Dependent variables	After intervention (Mean \pm Standard deviation)	Before intervention (Mean \pm Standard deviation)
the average number of the prescribed items	3.14 \pm 0.45	3.04 \pm 0.60
the percentage of prescriptions including at least one anti-biotic item	59.00 \pm 14.65	64.89 \pm 13.73
the percentage of prescriptions including at least one injection item	33.12 \pm 15.30	35.88 \pm 17.11

Table 2. A Comparison between Drug Prescriptions in all Centers before and after Intervention.

Dependent variables	Mean difference (After - Before)	Paired t statistics	p-value (2 - tailed)
the average number of the prescribed items	-0.10	-1.04	0.31
the percentage of prescriptions including at least one anti-biotic item	5.89	1.57	0.13
the percentage of prescriptions including at least one injection item	2.76	0.77	0.45