The introduction of a programme to improve the treatment compliance of institutionalised elderly patients

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Resumen

Objetivo: Evaluar la adherencia al tratamiento farmacológico en el grupo de población anciana institucionalizada, identificar las causas de falta de adherencia e implantar medidas que reduzcan su prevalencia.

Método: Se diseñó un programa de mejora en la adherencia al tratamiento farmacológico en residentes geriátricos. La intervención farmacéutica consistió en una técnica educativa de carácter mixto: información oral más refuerzo escrito. Se diseñó una hoja de recogida de datos tras revisión bibliográfica. Se llevó a cabo mediante una entrevista clínica y comprobación de comprimidos no tomados.

Resultados: Se implantó en 62 pacientes válidos para la gestión de la medicación de un centro sociosanitario de Alicante y se realizaron 140 intervenciones (2,8 intervenciones por paciente). Se mejoró la adherencia obteniendo diferencias significativas en la variable desconfianza por falta de información (p = 0,009) y prácticamente significativas en la mejora de la comprensión del sistema de dispensación (p = 0,058). La duplicidad en los tratamientos de los pacientes se logró eliminar en todos los casos tras la intervención farmacéutica.

Conclusiones: Nuestro estudio sugiere que la intervención de un farmacéutico en el manejo de pacientes geriátricos puede producir una mejora de la adherencia al tratamiento, con los consiguientes beneficios añadidos de una mejora en el conocimiento de la medicación y la reducción de posibles problemas relacionados con los medicamentos.


Summary

Objective: To assess drug treatment compliance in institutionalised elderly patients, identifying reasons for poor compliance and introducing measures to reduce its prevalence.

Method: A programme was designed to improve drug treatment compliance in geriatric patients in residential homes. Drug intervention consisted of using an educational technique of a mixed nature (verbal information with written back up). A data collection sheet was designed following a review of the literature. This was carried out by means of a clinical interview and by checking for tablets which were not taken.

Results: A total of 62 patients were chosen for drug management at a health and welfare centre in Alicante and 140 interventions were performed (2.8 interventions per patient). Compliance improved and there were significant differences in the variable for distrust due to lack of information (p = 0.009) and almost significant differences in the variable for better understanding of the dispensing system (p = 0.058). Duplicate treatment of the patients was eliminated in all cases after the pharmaceutical intervention.

Conclusions: Our study suggests that pharmacist intervention in the drug management of geriatric patients can lead to improved treatment compliance, with the added benefits of improved knowledge of the medication and a reduction in possible drug-related problems.

Key words: Compliance. Health and welfare. Independent medication management. Geriatrics.

INTRODUCTION

Health and welfare centres are institutions that take in people who are dependent from a functional, cognitive, healthcare and/or welfare point of view, and as a result are unable to remain in their homes. Furthermore, elderly peo-
ple, who are the main users of these centres, are limited when it comes to managing their own medications and have difficulty in understanding their treatment guidelines, which complicates their treatment and can lead to polypharmacy and self-medication. It is also more likely that these patients develop drug-related problems (DRPs). Pharmacists in the pharmacy departments of health and welfare centres are in an ideal position when intervening to prevent, detect and resolve these DRPs, as well as decreasing inappropriate prescriptions and possible adverse effects.

Different studies have shown the benefits of integrating the pharmacist into the multidisciplinary team, working in collaboration with the doctor and the other professionals who care for elderly people with multiple drug-related problems. In these studies, in addition to reducing costs and drug-related problems, there were improvements in the patients’ knowledge of the treatments and their disease, as well as compliance with the treatment, which in turn led to improved efficacy of the drug treatment.

Some authors indicate that between one third and one half of elderly people receiving drug treatment do not correctly adhere to the medical prescription, and more than 90% take lower doses than those prescribed.

Elderly people are particularly likely to have poor compliance due to the large number of drugs they have prescribed to them and the common deficits in physical dexterity and cognitive and memory. Indeed at present, the World Health Organization considers this to be a public health priority.

Compliance is defined as the patient’s decision to accept and follow the doctor’s instructions for taking the medication prescribed. This concept includes the positive aspect of commitment that reflects a greater feeling of independence for the patient in the choice and maintenance of the drug treatment.

According to Haynes, elderly people receiving multiple drug treatments are the main target for optimising drug treatment compliance. In the geriatric patients at our health and welfare centre, it has been estimated that 60% of patients are using multiple medications, meaning that interventions of this type are a priori highly justified.

Many methods have been used to assess compliance; however, due to the characteristics of the population, we selected methods which could be applied to large groups in a simple manner.

It has been shown that compliance improves by having a conversation with the patient during which information is given about the medication and the disease, support and supervision are offered, and by interventions to facilitate compliance.

The educational techniques aim to change attitudes and behaviour in order to acquire habits that are beneficial to health. The patient’s knowledge of his/her disease can improve long-term compliance, although this alone is not enough. In addition, these interventions lose effectiveness over time and should be reinforced.

Many strategies have been suggested to improve compliance. These include simplifying drug doses, providing written and verbal information, as well as choosing the most appropriate pharmaceutical preparation.

Since both the doctor and nursing staff of a health and welfare centre in Alicante experienced these problems with compliance, pharmacist intervention was considered necessary to improve it.

The objective of this study is to assess drug treatment compliance in institutionalised elderly patients, identifying reasons for poor compliance and introducing measures to reduce its prevalence.

METHOD

A programme to improve drug treatment compliance was designed for the 218 elderly residential care patients at a health and welfare centre in Alicante (Spain). Eighty-two of these patients required assistance for basic everyday activities (BEA) and 136 were self-sufficient.

Of the self-sufficient patients, 62 were in charge of their own medication and the nursing staff administered the treatment to the remaining 74.

The study period was six months, from December 2004 to May 2005.

In all cases, the medication was dispensed by the pharmacy department every week in individually thermostated blister packs, distributed by doses and days of the week. Only tablets and capsules were placed in the blister packs, and medication not fitting inside the blister pack was provided in an individual bag for each patient.

After a thorough review of the literature, a data collection sheet containing data which could lead to decreased compliance was designed (see questionnaire).

The method followed consisted of the following steps: a) review of clinical history: to obtain patient information (name, surnames, diagnoses, weight, height, and blood creatinine levels); b) review of drug treatment records: to obtain the current treatment, by the unit dose management programme used by the pharmacy department; c) patient interview: to collect information regarding compliance and to modify the patients’ beliefs about their illnesses, informing them of the importance of compliance, providing information and answering their questions about the treatment. Checks were made to ensure that patients were handling the blister packs and taking the doses correctly; and d) providing the doctor with information: about any drug-related problems detected.

The study was limited to 62 patients who were able to manage their own medication. Compliance was assessed via a clinical interview and by way of checks for missed tablets in the weekly dispensing system. Patients taking at least 85-90% of their weekly doses were classed as having treatment compliance.
The interview was performed by a pharmacist experienced in treating elderly people. The interview was performed without prior notice.

Checks for tablets not taken in the weekly dispensing system were carried out during the interview. The patients brought the current weekly blister packs to the interview and these were checked to see if they were taking the medication correctly or if they had missed any doses.

Two aspects were studied during the interview to identify compliance problems: over-medication and poor compliance.

Over-medication was defined as taking drugs not included in the drug treatment history, including drugs prescribed by other doctors, and self-medication. This could be due to the patients obtaining prescriptions at health centres or acquiring medication in pharmacies. This information was gathered during the interviews with the patients.

Poor compliance consisted of missing doses of medication. Poor compliance has multiple causes; however, in our study we assessed the most common ones in our area and those easiest to remedy by pharmaceutical intervention. No illness-related factors were taken into account, nor was the chronic or acute nature of the patients’ diseases. These included: failure to understand the blister pack dispensing system, administration difficulties, adverse effects, forgetfulness/carelessness, distrust (of the system and due to lack of information), and lack of efficacy.

The pharmaceutical intervention consisted of using an educational technique of a mixed nature (verbal information with written back up). This intervention was performed during a clinical interview. Written back-up was used for cases when the interviewer noted that the information provided had not been assimilated. Where necessary, the doctor was provided with information about how to make the appropriate changes, and patients were even provided with assistance in taking medication by a nurse when it was evident that they were not capable of independently administering their own medication.

The average value, standard deviation (SD), and confidence interval (CI) of 95% for quantitative variables were used for the descriptive analysis, having checked the normal distribution via the Kolmogorov-Smirnov method.

The χ² test was used for to carry out a proportional comparison of the groups studied, using a 95% confidence level.

**RESULTS**

An initial 30-minute interview was carried out with 62 patients to assess compliance and the problems which could hinder it. After being given an initial assessment, patients with compliance problems had a second follow-up interview to reinforce concepts and behaviour, and there was even a third interview with patients who required it.

Table I gives an outline of the study population.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Average ± SD or n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Females</td>
<td>79.03%</td>
</tr>
<tr>
<td>Age</td>
<td>81.13 ± 8.00</td>
</tr>
<tr>
<td>Drugs/day</td>
<td>6.75 ± 3.17</td>
</tr>
<tr>
<td>Tablets/day</td>
<td>6.80 ± 3.91</td>
</tr>
<tr>
<td>Assistance by external doctor</td>
<td>19.35%</td>
</tr>
<tr>
<td>Most common treatments</td>
<td>n (%)</td>
</tr>
<tr>
<td>PPI</td>
<td>53.57%</td>
</tr>
<tr>
<td>Diuretics</td>
<td>39.29%</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>35.71%</td>
</tr>
<tr>
<td>Antiaggregants</td>
<td>33.93%</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>33.93%</td>
</tr>
</tbody>
</table>

Table II shows the relative frequency and confidence interval of each variable in the study before and after the intervention. Significant differences were obtained in the variables for “distrust due to lack of information” (p = 0.009) and almost significant differences were found in the variable for “an understanding of the dispensing system” (p = 0.058).

No significant differences were seen in the other variables.

For the “duplicate treatment” variable, the p value could not be calculated due to the small sample size, although it is worth noting that all duplicate treatment of patients was eliminated after the pharmaceutical intervention.

Table III shows the interventions performed by the pharmacist to improve patient compliance and the relative frequency of each of these.

A total of 140 interventions were carried out during the study period (an average 2.8 interventions per patient). Twelve patients did not need any interventions as no compliance problems were identified. Patients refusing to attend the interview with the pharmacist were excluded from the study.

**DISCUSSION**

Independent medication management has been suggested as the appropriate route for improving compliance, although there are few studies showing the benefits of independent medication management and its effect on
compliance. Furthermore, the sample studied was small and the results were contradictory. However, there is often a lack of coordination between care units and this presents an additional risk to compliance. Duplicate prescribing can also lead to duplicate treatment.

After the pharmaceutical information it was seen that there was a decrease both in over-medication and poor compliance, although these were not statistically significant. During the initial patient interviews and with the help of the nursing staff, the pharmacist researched all of the medications that the patients were taking on their own initiative or which had been prescribed by another doctor, withdrawing duplicate treatments by providing information and educating the patients. Although the small sample meant that clinical significance could not be calculated, the fact that all of the patients stopped taking duplicate medication after the intervention is a clear indication that this was positive and effective.

There are a number of reasons why elderly people do not comply correctly with their treatments. An additional difficulty in our area is the problem that these patients have in understanding weekly dispensing systems. In fact, it was found that more than half of our patients had problems of this type. Following the educational intervention by the pharmacist to resolve the patients questions, this problem was reduced to 24% (p = 0.058).

Another widely documented problem was administration difficulties. Elderly people usually have eyesight or reading problems, which are difficult to resolve, and the complexity and different methods of administration makes it difficult for them to self-administer the drugs. In our group of patients, prior to the intervention, administration problems hindering drug compliance were detected. These were reduced after the intervention.

Adverse effects are the most common reason for drug-related problems, in fact the majority of drugs cause problems during the first month. Indeed compliance rates tend to be lower for drugs causing adverse effects. Similarly, Lamb et al. state that informing patients about the possible adverse effects of their medication prior to starting treatment may not be beneficial.

In our study, only 11.9% of patients reported side effects that limited their correct compliance with the treatment. Following the intervention, this figure decreased to 6.45%. It was not possible to calculate the statistical significance because of the small sample available.

According to other studies, forgetting to take the treatment is the most common cause of poor compliance. It is impossible to eliminate this factor by way of an intervention of the type performed, as this problem is due to the intrinsic factors of the patient and is subject to great variability. There are different strategies that can be used to improve this factor, such as reducing the number of daily doses or adjusting the doses to be taken at meal-times, as well as making the patient aware of the importance of the treatment to their health, the aspect we gave most attention to in our intervention. In patients who often forgot to take the medication, it was often decided to change their method of administration, with a member of the nursing staff involved in this process.

We found medications were very often prescribed to be taken once or twice daily, which is recommended to improve compliance in many studies, as more complicated treatment regimes may make compliance more difficult. Distrust of the doctor prescribing the medication or of the treatment can also be an important cause of poor compliance. This distrust is, on many occasions, due to lack of information about the treatment and methods of

### Table II. Relative frequency of the study variables before and after the intervention

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before the intervention</th>
<th>After the intervention</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over-medication</td>
<td>n (62)</td>
<td>RF (30)</td>
<td>CI</td>
</tr>
<tr>
<td>Duplicate treatment</td>
<td>7</td>
<td>11.29</td>
<td>5.04-22.49</td>
</tr>
<tr>
<td>Poor compliance</td>
<td>29</td>
<td>47.77</td>
<td>34.16-59.79</td>
</tr>
<tr>
<td>Understanding</td>
<td>34</td>
<td>54.84</td>
<td>41.76-67.32</td>
</tr>
<tr>
<td>Administration</td>
<td>15</td>
<td>24.19</td>
<td>14.60-37.02</td>
</tr>
<tr>
<td>Adverse effects</td>
<td>7</td>
<td>11.29</td>
<td>5.04-22.49</td>
</tr>
<tr>
<td>Forgetfulness</td>
<td>22</td>
<td>35.48</td>
<td>24.04-48.73</td>
</tr>
<tr>
<td>Distrust</td>
<td>45</td>
<td>72.58</td>
<td>59.56-82.78</td>
</tr>
<tr>
<td>Lack of efficacy</td>
<td>17</td>
<td>27.42</td>
<td>17.22-40.44</td>
</tr>
</tbody>
</table>

n: number in sample; RF: relative frequency; CI: confidence interval of 95%.

### Table III. Interventions performed by the pharmacist to improve compliance

<table>
<thead>
<tr>
<th>Interventions</th>
<th>n (140)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informing the patient</td>
<td>87</td>
<td>62.14</td>
</tr>
<tr>
<td>Informing the doctor</td>
<td>39</td>
<td>27.86</td>
</tr>
<tr>
<td>Switching to nurse-assisted medication</td>
<td>5</td>
<td>3.57</td>
</tr>
<tr>
<td>Suggested modification to doses</td>
<td>8</td>
<td>5.71</td>
</tr>
<tr>
<td>Exclusion from the programme</td>
<td>1</td>
<td>0.71</td>
</tr>
</tbody>
</table>
administration\textsuperscript{19,20}, or unfamiliarity with the dispensing system used. In our case, this implied a radical change in the way the institutionalised patients took their medications.

Providing clear information and answering any questions coming up during the interview meant increased trust and better knowledge of the illness and its treatments\textsuperscript{19,20}. Knowledge about the medication that the patient is taking is closely linked to compliance\textsuperscript{19,11}.

Initially, 72\% of patients distrusted the medication, mainly due to lack of information. Following the intervention, confidence improved significantly (p = 0.009), showing the usefulness of the intervention regarding this aspect.

However, according to some authors, the efficacy of the measures as an individual factor is very controversial. Therefore, in spite of the significantly improved level of knowledge, no significant impact was observed on compliance\textsuperscript{18,20}.

Chronically-ill patients (most of the patients in our study) may be asymptomatic, which leads to difficulties with compliance, as they tend to believe that they do not need the medication since they feel well\textsuperscript{19}. Earlier compliance studies have shown that patients often stop taking medication because they believe that it is not effective. On other occasions, this is because they do not experience improvements in their symptoms and they decide to stop taking the medication because they are not noticing any benefits\textsuperscript{19}.

The difficulty of improving compliance in these patients stems from the fact that poor compliance is due to a personal perception, which is difficult for an outsider to assess. Once again, the information and motivation (deriving from trust) are the most highly-recommended mechanisms for solving the problem. Prescribing alternative medication can also be a solution.

After the intervention, the improvements were very slight, showing that solving these problems would be difficult.

The study was followed up for six months, which is the required period according to the most recent studies. The greatest difficulty involved in the study was the duration of the intervention (around 30 minutes), which means investing a lot of time in the intervention. However, informing and motivating patients to comply with the treatment is simple and requires no special means.

Our study of 62 patients did not show any statistical benefit from the pharmaceutical intervention in the improved compliance of institutionalised elderly patients, although a notable improvement of their understanding of the system and levels of trust was recorded.

Various studies show that among different methods, the regular use of aids for taking medications can improve compliance\textsuperscript{1}. As a result, in the post-study period, which has still not been assessed, patients reporting a benefit regarding their treatment compliance were provided with pill boxes.

To resolve the problems detected, a series of overall interventions were also performed. Due to the low level of comprehension regarding how to handle the blister packs in which the medication is dispensed to elderly people and the negative repercussions of this on compliance, it was decided to make a series of changes in the dispensing process. The beginning of the weekly administration of blister packs was switched from Wednesday lunchtime to Monday breakfast time, in order to improve understanding and avoid errors about when to start the blister pack, and make it easier for nursing staff to carry out a weekly check of the blister pack.

Therefore, establishing a supportive relationship regarding the joint decision when administering medication contributed to compliance\textsuperscript{12,20}.

In order for the message to be effective, it is necessary to use all the usual communication resources: verbal, written and visual\textsuperscript{19}, and it is necessary to ensure that the patient has understood the information after communicating this to him or her\textsuperscript{20}.

References

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