Original Research Article

The Role of the Clinical Pharmacist in the Identification and Management of Corticophobia – An Interventional Study

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Abstract

Purpose: To explore patients' attitudes and knowledge about corticosteroids, investigate the reasons behind corticophobia (if any), explore the sources and validity of such beliefs, as well as investigate the role of the clinical pharmacist's intervention in minimizing corticophobia and improving patient compliance.

Methods: The study adopted 2 methodologies: a structured interview technique with patients selected according to inclusion criteria, and a pre- and post-intervention to measure the effect this intervention may have had on patients' compliance, fear and general behavior towards corticosteroids.

Results: A total of 204 patients were interviewed, most of whom (56.9 %) were female, 41.2 % had several chronic diseases and 41.7 % used steroids for the first time. Fourteen percent of respondents did not know why they had been prescribed corticosteroids. The main source of information about corticosteroids was reported to be "friends and family" (37.7 %) while the main reasons for corticophobia were reported to be theoretical/potential adverse drug reactions (ADRs, 38.5 %), actually experienced ADRs (24.6 %), or the fact that they had heard that corticosteroids were harmful (8 %). The clinical pharmacist's intervention significantly improved patients' compliance and decreased corticophobia (p < 0.001), but it did not significantly affect their general behavior towards corticosteroids (p = 0.07).

Conclusion: In general, patients' sources of information about corticosteroids may be unreliable or invalid; creating a poor background and subsequently lead to corticophobia and poor compliance. Clinical pharmacist intervention has a significant impact on lowering patents' fear of corticosteroids, and improving their compliance with corticosteroids treatment regimens.

Keywords: Corticosteroids, corticophobia, patient compliance, structured interview, steroids, adverse drug reaction

INTRODUCTION

Corticosteroids are used widely, in different dosage forms, to prevent and treat several diseases worldwide [1]. This is considered inevitable for the management of chronic diseases, such as asthma and allergy or prevent rejection in case of organ transplants [1,2]. Inappropriate use of corticosteroids may lead to over or under treatment [3], worsening of conditions or eventually therapy failure. Patients may refuse to take corticosteroids because they fear their unwanted, documented side effects (e.g. hyperglycemia, osteoporosis, weight gain,

etc) [4], the fact that may compromise patient adherence to medication and thus, the control of their diseases [5]. According to the American College of Clinical Pharmacy (ACCP), the clinical pharmacist has an important role to play in patient education and promotion of patient adherence [5].

In the last few years, patient counseling has focused on the importance of 'concordance' or adherence rather than compliance. The former is more of a patient-centered care where the clinicians respect the rights of patients to decide whether or not to take prescribed medicines, based on their value of risks and benefits of the medication [6].

Phobic disorders are the most common of all the psychiatric disorders and can be divided to either specific or social[7]. Some may consider the term, "Corticophobia", as a misnomer, based on the fact that "phobia" is defined as an "irrational" fear, whereas in this case patients have "rational" fears towards corticosteroids due to its side effects[4]. In this research, the term "phobia" is used instead of "Corticosteroids fear".

To the best of the author's knowledge, none of the reviewed studies looked beyond describing the phenomenon of corticophobia (fear of corticosteroids) [4,8-10]. No study explored if the reasons behind such a fear are true. For example, it would be worth studying to see if the fear is truly related to the side effects of cortisone or if this reluctance can be changed by changing the route of cortisone administration, or even by proper counseling and education.

This study aims to: 1) understanding patients' attitudes and fears of corticosteroids that may interfere with their acceptance of these medications, 2) investigating the reasons behind this corticophobia and exploring the sources and validity of patients' beliefs, its relation to different factors like patients' gender, age, and education level. 3) evaluating the role of the clinical pharmacist in the identification and management of corticophobia among patients,. and thus improving their compliance.

METHODS

The study adopted 2 methodologies: The first was a structured interviewing technique using a pre-piloted questionnaire with patients selected according to inclusion criteria (below). These interviews were conducted on 2 occasions; pre- and post- the clinical pharmacist's intervention with patients (ie-the second methodology), in order to measure the potential effect that the clinical pharmacist's intervention may have had on patients' compliance, fear and general behavior towards corticosteroids.

The study was conducted between February 2011 and June 2011. at The Specialty Hospital (a private hospital in Amman/Jordan). The structured interviewing technique was adopted in order to obtain a higher quality data with fewer missing or inconsistent responses, when compatred to self-completion survey, as the interviewer can provide clarification when needed in comparison with the self-completion survey. The recruitment of patients for interviews was done in the outpatient pharmacy, where identified patients were approached and asked to participate in the study. Sampling was made using non probability purposive technique to obtain the target sample.. The appropriate sample size was determined by applying Mendenhall equation [11] to be a minimum of 68 observations. Estimating a drop out factor of 30% (the possibility that some respondents would drop out of the study), a target sample that is larger than the calculated one (ie- 200 patients) was included in an attempt to enforce the information obtained, and to achive a higher level of accuracy of data.

Inclusion criteria were patients ≥ 18 years of age to whom a corticosteroid has been prescribed for the first time, already taking a corticosteroid or personally asked for information about corticosteroids. Those excluded were patients who were prescribed or required information about medications other than corticosteroids, those who used or asked about anabolic steroids (steroids used in an attempt to improve athletic performance and muscle mass enhancement rather than treating an underlying disorder such as hypogonadism) [10] or below 18 years of age even if they were on any corticosteroid treatment regimen. These exclusions can be attributed to the project focusing on recording any fears among patients regarding the use of corticosteroids as part of their treatment regimen, not for other issues such as the use of anabolic steroids to enhance muscle mass. In the case of patients under 18 years, the exclusion was a trial to eliminate any parental influence that might interfere with the results and conclusions.

Approval to conduct this study was obtained from Graduate Studies Committee at the Faculty of Pharmacy, and the Deanship of Graduate Studies at The University of Jordan. An ethical approval was also obtained from the Institutional Review Board (IRB) of The Specialty Hospital where the study was conducted.

The questionnaire was designed by the research team and tested for validity and reliability. It started with an introductory greeting, patients demographic details, medical history, their background information about corticosteroids, their compliance, attitude, general behavior and fear regarding the use of corticosteroids These variables were measured using a mixture of closed and open-ended questions in addition to likert scales. Moreover, patients were presented with different statements and asked to state the frequency of how they felt towards corticosteroid.

Table 1: Likert scales statements used to reflect patients' fear, general picture and compliance towards using corticosteroids

Patients' fear area interview statements

Statement	Situation
1	I'm afraid of any corticosteroid containing product
2	I'm afraid of the corticosteroids administration method
3	I'm afraid to stick to the doctors treatment instructions if he prescribes high doses, or high frequency of corticosteroids use
4	I'm afraid of the corticosteroids adverse effects
5	I get afraid of corticosteroids if I don't feel better after using it
6	I'm afraid to stay on steroids for a long period of time
7	I picture corticosteroids as a creepy treatment

Patients' corticosteroids general picture interview statements

Statement	Situation
1	I'll use corticosteroids if I am prescribed it once again
2	I believe that corticosteroids are effective treatments
3	I've found in my or others experiences that corticosteroids are effective

Patients' compliance area interview statements

Statement	Situation
1	If the steroid dosage regimen doesn't relief my symptoms quickly, then it's not an effective regimen.
2	I'll stop using steroids as soon as I get well
3	I'll stop using steroids if I don't get well
4	I'll stop using steroids if it caused adverse effects
5	I'll stop using steroids if I had to use it for a long time

Each Likert scale was classified to three areas according to the Means obtained. These areas were: "High compliance", "Low fear" and "Bad picture" areas, when N = > 3.4 - 5.0; "Medium compliance", "Medium fear" and "Fine picture" areas, when N = 2.6 - 3.4; "Low compliance", "High fear" and "Good picture" areas, when N = 1.0 - < 2.6

Table 1 provides a summary of the likert scales statements used in the questionnaire. A copy of the questionnaire can be provided by the authors upon request.

After the first structured interview, the clinical pharmacist's intervention was then conducted via a phone call with all participants (n=204). Discussion included correcting any myths, enforcing facts about corticosteroids, diseases and treatment regimens, proper administration, drug–drug interactions, main side effects and possible means to avoid or manage them, in addition to answering any questions that may arise. Moreover, the researcher tried to reduce patients' corticophobia (if present) to help them adhere to their treatment regimens, and consequently improve their quality of life,. The phone call duration varied depending on the each patient's needs (average= 30 minutes). Each patient was phoned only once. These needs were decided through the first structured interview and the intervention content was tailored accordingly. The clinical pharmacist concentrated on filling the gaps in patients' knowledge and behavior regarding corticosteroids, and patients were given a free

Table 2: Clinical pharmacist's intervention aspects with patients regarding their corticosteroids treatment regimen (n = 204)

Intervention of the clinical pharmacist	N* (%)
Giving patients basic information about steroids	204 (100)
Advising patients where to find relevant information about their medications	204 (100)
Why the drug is being used	29 (14.2)
Instructing patients how to use their drug properly (such as how to use ICS devices)	121 (59.3)
Informing patients about possible Drug-Drug interactions and how to decrease or avoid them [a]	84 (41.2)
Informing patients about the possible ADRs & time frame of their medication	204 (100)
Instructing patients on probable means of managing any ADRs associated with their medication [b]	61 (29.9)
Instructing patients on possible means to prevent any possible ADRs	204 (100)
Suggesting ways to remember taking the medication for patients who claimed forgetting it. e.g. suggest keeping a diary, setting an alarm	139 (31.9)
Answering any patients' related questions	130 (63.7)

* N= number of patients to whom each of the clinical pharmacist's intervention was done
* a e.g. patients taking corticosteroids along with antacids were advised to leave at least two hours between the two dosage forms
*b: e.g. patients suffering from coughing after the use of their nasal ICS, where advising them not to sniff the nasal spray vigorously can reduce their complains

time at the end of the interview to ask any other questions he/she liked to discuss about their corticosteroid regimen. Table 2 summarizes the number and type of information presented to each patient over the phone.

After two weeks interval of the intervention (to minimize the recall bias), the researcher scheduled another structured interview with respondents to evaluate the efficacy of the intervention, describing any change in fear (if any) felt by respondents, the background knowledge, adherence to the treatment regimen and other related aspects.

Different measures have been taken in a trial to confirm the collection of uninfluenced data. For example, social desirability bias was minimized by the researcher not mentioning to the patients that the study was to evaluate his educational intervention among them, and assuring them that this was a descriptive study, where confidentiality was respected.

Statistical analysis

Data obtained were analyzed using the Statistical Package for the Social Sciences (SPSS$^©$) version 17.0. Different appropriate parametric and nonparametric (Pearson correlation coefficient, independent and paired samples T-tests along with the one way ANOVA) descriptive and inferential statistical tests were used according to the type of data to detect any significance between groups ($p<0.05$).

RESULTS

Out of total 236 patients had been approached**,** the researcher structurally interviewed 204 patients (response rate = 86.44 %)**.** The age of respondents ranged between 19 and 80 years (mean= 34.4 ± 12.2). More than half (56.9%) of respondents were female, and 41.2 % had several chronic diseases like diabetes and hypertension. There were two illiterate patients,

and 142 patients had undergraduate and post graduate degrees. Respondents with non-health care-related jobs constituted 81.9 % of patients. Table 3 summarizes the demographic characteristics of the participating patients in the study.

For the sake of evaluating non-response bias, demographic characteristics of non respondents were recorded. The mean of non-respondents' age was 30.71 ± 7.53 females contributed 65.62%, and 81.3 % of non-respondents had no health care-related jobs. Reasons for non-response were mainly attributed to patients being busy or not having an interest in participation.

Patients' general information about corticosteroids

The main source of information about corticosteroids was from friends and relatives (37.7 %). Table 4 summarizes patients' main information sources about corticosteroids.
About half of respondents (47.5 %) considered cortisone to be an anti-inflammatory, 17.2 % considered it to be a natural hormone found in human body, 38.5 % considered it to be an analgesic, and 23.0 % considered it to be an antibiotic.

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Table 3: Demographic characteristics of patients participating in the study (n = 204)

	Frequency,(%)		Frequency (%)
Gender		*Type of Job*	
Male	88 (43.1)	Health Care	37 (18.1)
Female	116 (56.9)	Non-Health Care	167 (81.9)
Overall	204 (100)	Over all	204 (100)
Age (year)		*Associated disease*	
19-29	89 (43.6)	Chronic disease	84 (41.2)
30-39	59 (28.9)	Chronic disease Free	120 (58.8)
40-49	30 (14.7)	Overall	204 (100)
50-59	15 (7.4)	*Medical field relatives*	
60-69	5 (2.5)	Yes	107 (52.5)
70-80	6 (2.9)	No	97 (47.5)
Overall	*204 (100)*	*Overall*	*204 (100)*

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Table 4: Patients' reported sources of information, their beliefs and suggestions to prevent the adverse drug reactions (ADR) corticosteroids (n=204)

Variable	Frequency (%)
Source of information	
Friends and relatives	77 (37.7)
Physicians	48 (23.5)
Multimedia	26 (12.7)
School & university	19 (9.3)
Pharmacists	16 (7.8)
Internet	10 (4.9)
Books	5 (2.5)
Own experience	3 (1.5)
Total	*204 (100)*
Belief	
Corticosteroids did not OR would not cause any discomfort	116 (56.9)
Corticosteroids did actually cause discomfort or side effects	61 (29.9)
Corticosteroids may cause some adverse effects	19 (9.3)
The patient is not aware of any ADRs of corticosteroids	8 (3.9)
Total	*204 (100)*
Prevention methods	
Follow doctors instructions	46 (22.5)
Stop using the medication	28 (13.7)
Lower the steroid dose	21 (10.3)
Use it only when needed	15 (7.4)
Find an alternative	15 (7.4)
Co administration of supplements (e.g., Ca, & Vit. D)	12 (5.9)
Other: e.g. exercise, use herbal tea etc	9 (4.4)
Patient has no idea how to deal with possible ADR	58 (28.4)
Total	*204 (100)*

Patients and their steroid treatment regimen

Among respondents, 41.7 % used steroids for the first time, 34.8% have been using steroids for years, and 23.5 % were unsure if that was their first time or not. Allergic rhinitis (26.5 %) and asthma (13.2 %) constituted the main reasons why patients were on steroids, with 14 % of respondents not knowing why they had been prescribed corticosteroids.

Creams (28.4%), oral tablets (25.5%) followed by inhalers (21.6%) were the most commonly used corticosteroids dosage forms, with 26.0% of patients preferring the use of topical creams and 19.6% preferring oral tablets. More than half of the respondents (56.9 %) reported that their corticosteroids dosage regimen did not or would not cause them any harm. Other respondents' beliefs are presented in Table 4.

Of the different ADRs associated with the use of corticosteroids, patients' main concerns were weight gain (49.5 %), osteoporosis (40.7 %), and other ADRs with lower comparable frequencies, such as, headache, coughing, fluid retention, hypertension and diabetes. Asking respondents to describe the time frame for such ADRs, about 55 % of respondents believed that corticosteroids caused adverse effects on the long run, 30.0 % said that ADRs were quickly seen, and 14.2 % had no idea about the time frame of corticosteroids ADRs. None of the respondents demonstrated that corticosteroids could have both a quick and a long term ADRs.

Several ways have been suggested by respondents in order to prevent or decrease corticosteroids possibly associated ADRs, described in Table 4.

Patients' compliance with corticosteroids regimen

As mentioned in the Methods above, compliance was classified using a likert scale into *High, Medium* and *Low*. Some respondents (n=138, 68.1%) unintentionally did not take their corticosteroid dose (e.g. forget). However, 65 patients (31.9%) intentionally did not take their steroid dose, among which, 38.5% attributing their avoidance to the fear of theoretical/potential ADRs, 24.6% attributing such avoidance to the actually suffered ADRs, and about 8% attributing it to the fact that they have heard that corticosteroids are harmful. The rest (29.3=2%) mentioned 'other' reasons for intentionally stopping the steroid, e.g. feeling better, no trust in the medication, and coming near the end of the treatment duration.

No statistical significant differences were recorded between gender, age groups or educational level with patient's compliance; with the p values being (0.06), (0.209), and (0.231) respectively using one way ANOVA statistical test. However, both males (N= 2.22 ± 0.94) and females (N = 2.49 ± 1.08), despite of their age, had a low compliance towards corticosteroids use.

Respondents with health care-related jobs had a medium compliance (N = 2.74 ± 1.09) compared to the low compliance of non-health care-related assigned ones (N = 2.29 ± 0.99), (p=0.017). Both

patients who had a relative working in a health care-related job (N = 2.37 ± 0.96) and those with no such relatives (N = 2.38 ± 1.09), had a medium compliance towards corticosteroids treatment regimen, (*p* = 0.946).

Patients' reported fear of corticosteroids

As mentioned in the Methods above, reported costicophobia was measured and classified using a likert scale into *High, Medium* and *Low*. No statistical significant differences were recorded between gender, age groups or educational level with patient's corticophobia; with the *p* values being (0.789), (0.86), and (0.07) respectively. Males (N = 2.65 ± 0.94) and females (N = 2.69 ± 1.04) had a medium fear of corticosteroids. The fear Mean of those working in health care fields (N = 3.00 ± 1.00) and those not working in health care fields (N = 2.60 ± 1.00) remained within the medium fear area of corticosteroids, (*p*=0.02). A medium fear towards corticosteroids was also recorded in the case of patients having relatives working in health care fields (N = 2.60 ± 0.99) and those with no such relatives (N = 2.75 ± 0.99), (*p* = 0.26).

Patients' general behavior/behavior regarding corticosteroids

As mentioned in the Methods above, general picture about corticosteroids was classified using a likert scale into *Good, Fair* and *Bad.* As a summary of patients' general behavior towards corticosteroids, a total of 59 (28 %) and 24 (11.8%) of respondents said they would often or always avoid using corticosteroids respectively. Males (N = 2.21 ± 0.70) and females (N = 1.93 ± 0.85), (*p* = 0.014), health care assigned (N = 1.95 ± 0.65) and non-health care assigned patients (N = 2.08 ± 0.83), (*p* = 0.652), had a good general picture about corticosteroids. No statistical significant differences were found between patients age groups (*p* = 0.170), or the presence of any health care assigned relatives (*p*=0.140), with their general behavior about corticosteroids.

Impact of the clinical pharmacist's intervention

The clinical pharmacist's intervention regarding corticosteroids involved several aspects that are summarized in Table 5. At the last section, the clinical pharmacist left a free for the patient to ask any other questions she or he liked to discuss about their corticosteroid regimen. Patients' responses regarding their compliance, fear and general behavior towards corticosteroids prior and post the clinical pharmacist intervention are presented in Table 7. Data obtained in the compliance part, both before and after the clinical pharmacist's intervention, followed a normal distribution pattern, with KS values of 1.85, 2.45 (>0.05) respectively. Accordingly, paired samples T-test was used to find any significant difference between the groups. Test had shown a significant difference between groups, with a *p* value of <0.001. Where the average pre intervention low compliance level (N= 2.38 ± 1.02) was increased to high compliance level (N= 3.32 ± 0.42) after the clinical pharmacist's intervention.

Data obtained in the fear part, both before and after the clinical pharmacist's intervention, followed a normal distribution pattern, with KS values of 1.33, 2.20 (> 0.05) respectively. Accordingly, paired samples T-test was used to find any significant difference between the groups. Test had shown a significant difference between groups, with a *p* value of < 0.001. The average pre intervention medium fear of corticosteroids (N = 2.67 ± 0.99) was lowered to a low level of fear (N = 3.59 ± 0.51) post the clinical pharmacist intervention.

Data obtained in the general behavior part, both before and after the clinical pharmacist's intervention, followed a normal distribution pattern, with KS values of 1.72, 2.63 (>0.05), respectively. Accordingly, paired samples T-test was used to find any significant difference between the groups. Test has shown no statistical significant difference between groups, with a *p* value of 0.07. Pre intervention, a good general picture about corticosteroids was present (N = 2.06 ± 0.80) and still a good general picture about corticosteroids is kept (N = 1.95 ± 0.58). The intervention of the clinical pharmacist are represented in Table 5.

DISCUSSION

The study investigated, for the first time, the attitudes of patients towards corticosteroids and the causes behind their fear (if present). Moreover, it also described any correlation of these variables with patient's gender, age and education levelor other factors.

In general, most participants in this study believed that corticosteroids did not or would not cause any harm, had obtained their information mainly from friends and relatives and would consult with their doctor in case of any serious ADR.

Table 5: the Impact of the clinical pharmacist intervention on patients' fear of, compliance and the general picture towards their corticosteroids therapeutic regimens

Comparasion aspect	Before intervention	After intervention	*p* value
Fear	Medium (N = 2.67 ± 0.99)	low (N = 3.59 ± 0.51)	< 0.001
Compliance	low (N = 2.38 ± 1.02)	medium (N = 3.32 ± 0.42)	< 0.001
General picture	Good (N = 2.06 ± 0.80)	Good (N = 1.95 ± 0.58)	0.07

Although a statistically significant difference was found between the means of the health care assigned and non-health care assigned respondents, both means of the two groups were located in the *medium fear* area. The health care assigned respondents' lower fear levels compared to non-health care assigned ones can be attributed to the experience about corticosteroids health care assigned respondents get through their daily practice, and the knowledge of how to decrease or prevent associated ADRs [3].

Motreover, results have shown that the majority of respondents had no health care-related jobs, and almost half were without relatives working in health care fields. Thus, patients ultimately got their medication related information from sources such as, family, friends, multimedia (magazines, television and radio programs, etc) and their own experience, which might be the reason behind the scarcity of knowledge patients had about corticosteroids. Lay sources do not contain the appropriate information about corticosteroids, and this might be attributed to the short space or time, and the authors' possible conflicts of interest or inherent bias with regard to the subject material, which might accordingly overestimate or underestimate effects of the subject being presented [13]. Previous research in Jordan and Northern Ireland revealed that people in general tend to use their family and friends as a trust-worthy source of medical information [14,15].

More than 10% of patients did not know why they were using corticosteroids. This is important, especially with slightly less than half of respondents being prescribed corticosteroids for their first time and a similar percentage having chronic diseases. This lack of knowledge about treatment regimen on the part of the patient, reflects dereliction on the part of the responsible health care professionals. Previous research revealed that physicians expected pharmacists to educate patients about the safe and appropriate use of their medication [16,17].

Improper knowledge was among the reasons behind intentional avoidance of patients towards their corticosteroids treatment, along with their fear of associated ADRs and their lack of trust in their medication, forcing some patients to alter their treatment regimen, sometimes even without consultation. This was also evident in previous research [8-10]. Although non-intentional reasons such as forgetfulness contributed the most to non-adherence in this study, ADRs whether truly suffered or potentially feared contributed to about 70 % of intentional reasons of avoidance. Some of these ADRs were manageable, yet patients were not informed about the proper way of avoiding them. Examples include: advising patients against taking oral tablets on an empty stomach, where abdominal pain and nausea were felt [3], or advising patients to wash their mouths after using Inhaled Corticosteroids (ICS) to prevent oral thrush [18].

Fear of possible ADRs such as osteoporosis was reasonable, especially in those who needed the chronic use of corticosteroids [19]. However, several methods can be done to diminish the possibility of experiencing such an adverse effect, including the increase of calcium diet, time of exercise, and frequent check-up and monitoring [20]. If patients happen to have low calcium levels or at high risk of developing osteoporosis, there are pharmacological aspects to follow, such as calcium and vitamin D supplements, and if necessary, bisphosphonates can also be prescribed [2]. On the other hand, the reported methods by patients to reduce these ADRs were: decreasing the dose they take, altering the daily regimen to alternate day, stopping the medication and/or finding an alternative other than corticosteroids. This would result in diminishing treatment's benefits, losing trust in the drug and/or the health care provider, increased levels of drug avoidance and in extreme cases, treatment failure. Gillissen and Lecheler found that side effects were the most common reason for asthmatics to dislike their steroid medications in a study conducted in Germany on 346 patients [8].

These observations stress the importance for health care professionals, especially pharmacists who are involved in care of patients taking corticosteroids, in questioning patients about their understanding of the role of their medications, particularly ICS, their fears and misconceptions, and what they consider to be adequate asthma control, in order to provide appropriate education and counseling [18].

The importance of clinical pharmacist's intervention in patient education was evident in this study. All patients were given information about corticosteroids and patients were also informed of where to get reliable information about medicines. This intervention positively shifted patients' compliance from low to high and reduced patients' fear of corticosteroids from medium to low. The clinical pharmacist helped patients face this fear by understanding the risks and benefits model, and helped them manage the possible risks. In case patients' information proved incorrect, the clinical pharmacist corrected any misconceptions. This role of the clinical pharmacist reflects a relatively new dimension in the pharmacy profession that was clearly defined by the introduction of the concept of Pharmaceutical Care by Hepler and Strand in the year 1990 [20] and has been supported by several studies in the literature [12,18].

Previous research in Jordan revealed that the majority of the Jordanian general public would not hesitate to ask the pharmacist for advice, especially if the condition was not serious enough to see a doctor [14]. This is promising in terms of the future implementation of pharmaceutical care in community and hospital pharmacy settings in Jordan.

The importance of this study lies in two main factors; the first is exploring and managing the problem of corticophobia as a cause of patient non-compliance. The second is highlighting the role of the clinical pharmacist in the identification and management of corticophobia by proper intervention. It is anticipated that education might decrease or even eliminate such fear and consequently improve patient's compliance and quality of life [12]. However, the intervention developed for this study was short-term and did not include long-term follow-up. Norris *et al* reported that long-term interventions to ensure long-term maintenance of initial behavior change are needed [13].

Limitations of the study

Generalization of the study is limited since it was applied at one private hospital in Amman, where other hospitals (public or private), and community pharmacies were not presented. Positive impact of the clinical pharmacist on patients might be for a short term only, and follow up is needed to investigate the long term effect, which was not applied in this study. Furthermore, the design of this study did not include a control group, where patients received routine care (no intervention). The consideration of the inclusion of such group

in future studies will make it possible to compare and validate the effect of clinical pharmacist intervention.

CONCLUSION

Corticophobia is present among patients and is linked to various factors, such as fear of actual or potential ADRs. The clinical pharmacist's intervention has a positive impact in identifying and managing corticophobia among patients. Such intervention decreases patient's fear and increases compliance with corticosteroid treatment plan.. More quantitative research in corticophobia is required to obtain an in-depth picture of this subject. Future work should focus on building a solid and validated score of patients' corticophobia that can be applied to other settings rather than subjectively describing its presence.

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