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Barriers to Drug Adherence in the Elderly Patients Compared to a Younger Group: Improving Current Medication Adherence Scale

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Abstract

Brief Synopsis:Elder patients may have disadvantages like loss of cognitive function or difficulties with remembering for drug inadherence. However they have developed a 'HealthWisdom' throughout the years which overcome communication barriers with physicians and protect themselves from uncertain perceptions.

Key words: Medication Adherence, e-health services for the aged, family practice

Introduction

Long-term use of drugs is the mainstream of treatment of chronic diseases.'Medication adherence is defined as the extent to which patients take medications as prescribed by their health care providers and as agreed upon in the treatment plan [1]. Patient adherence to a treatment is of paramount importance, since on average 50 % of patients do not take their medications regularly or as prescribed by the care giver [2]. The term 'adherence' is preferred over compliance because it reflects an association between the patient and the physician whereas compliance underlines patients following the physician's orders passively. Initially, the patients were thought to be the core of the adherence problem. As patient education alone has not been a successful strategy to improve adherence the role of the caregivers was considered [3]. Most patients stop their medication within the first six months of therapy[4].Lately, the physicians and the health care system were thought to play some important roles for inadherence in terms of polypharmacy, ineffective communication skills, and lack of time for patient visits.

There are direct and indirect methods to measure adherence. Direct methods include observing patients and measurement of the level of a drug or its metabolite in blood or urine. These approaches are expensive. Moreover 'White coat adherence' can create a false status of improved adherence, because patients may exhibit *white-coat adherence*, or improved medication-taking behavior in the 5 days before and 5 days after a health care encounter [5].

Indirect methods include patient questionnaires, counting of pills, self-reports, prescription refills, assessment of patient's clinical response, as well as patient scales or survies [5].

No method is gold standard but the simplest way of measuring adherence is patients self-reports and patient interviews [6,7]. Some studies showed that self-report of patients did underestimate nonadherence compared to pill counts or biologic assays [8,9]. However, there are also studies which suggest that patients self-reports may be a

reasonable choice of measuring patient adherence [10,11].

Several studies have been conducted examining medication adherence for various conditions, and adherence has consistently been found to be suboptimal [12,13,14,15,16,17,18].

The necessity to follow medications is pointed out for elder group of patients. Adherence in the elderly group has been reported to be 26% to 59% in different studies [19,20,21].

A few decades have passed with many studies on drug inadherence most being conducted for a single disease thus only providing narrow data. The state of mind of the patients needs to be clarified which cannot be achieved via adherence scales of the present time.

Subjects and Methods

The study was approved by Baskent University Institutional Review Board [Project no: KA16/276) and supported by Baskent University Research Fund.

450inadherent cases for each gender were planned to be the cohort of the study. All of the cases were able to provide self care. 8-item Morisky Medication Adherence Scale (MMAS-8) was given to 1323 women and 1242 men to define the inadherent cases. The rate of inadherence for this study was found to be 34% for females, [median 5, min: 2, max:8) and 36,2% for males (median:6, min: 2, max:8) The cases were using at least four pills a day (min 4, max 9, median 6). The exclusion criteria were; former surgery for any reason, use of parenteral injections, mentals, prior myocardial enfarction, seizure or resuscitation, the recent loss of a family member, needing help for taking medicine, and being the care provider of other elders.

Then the inadherent cases were given the 9- item reasons for inadherence questionnaire developed and only previously used in a similar study for patients under 65 years of age by us to define the reasons for not taking their drugs[22]. That study contained 400 women and 392 men under 65 years of age. This new questionnaire was thought to be an extension of the validated scale of Morisky.

The internal consistency of the questionnaire was checked with Cronbah's Alpha. It was found to be 0.824 which showed high consistency

Scales

Morisky Medication Adherence Scale (MMAS) is a 4-item self reported, structured scale developed by Morisky to define adherence [23] . Recently, an 8-item self-reported scale has been developed and called MMAS-8 and is divided into 4 items that assess intentional nonadherence and 4 items that assess unintentional nonadherence. (table-1)

For the first seven questions; each NO as an answer counts for one and each YES counts for zero. And for the eighth question; A=4 points, B= 3 points, C=2 points, D= 1 point and E= 0 points and be divided by four. Scores on the Morisky Medication Adherence Scale can range from 0 to 8, scores < 6 reflecting low adherence, scores $\geq 6 < 8$ reflecting medium adherence, and scores = or > 8 reflecting high adherence[24](table-3). It is one of the most widely used self-reported measures of medication adherence**.** Highly adherent patients were identified with the score of 8 on the scale, medium adherers with a score of 6 to < 8, and low adherers with a score of <6. Using these cutpoints, this study population had 32.1% low adherers, 52.0%medium adherers, and 15.9% high adherers**.** The Inadherence Questionnaire: A thorough search in literature showed that forgetting, high costs, advers effects, polypharmacia, poor communication with the physician and the health team, concerns about the accuracy of the treatment, and refusing the illness were found as frequent reasons for intentional inadherence by other researchers.

We planned to form a questionnaire which involved all these results. We also planned to add 'Media Effect' for inadherence because we thought it included some of the reasons listed above. The questionnaire is not validated yet and translation to English was made by an academic of English Language Teaching department. (table-3)

Statistical Analysis

Statistical analysis was performed using SPSS software (Version 17.0, SPSS Inc., Chicago, IL, USA). If continuous variables were normal, they were described as the mean±standard deviation ($p>0.05$) in Kolmogorov-Smirnov test or Shapira-Wilk ($n<30$), and if the continuous variables were not normal, they were described as the median. Comparisons between groups were applied using Student T-test for normally distributed data and Mann-Whitney U test was used for the data not normally distributed. The categorical variables between the groups were analyzed by using the Chi-square test or Fisher Exc. test. The Bonferroni correction to adjust the p-value for each hypothesis to 0.0166. Values of $p < 0.017$ were considered statistically significant.

Results

Forgetfulness ($p=0.001$) for women and ($p=0.000$) for men, Multiple Drug Use, and Drug Side Effects were both significant for inadherence for the elderly ($p=0.000$). In contrast; Refusing the Illness ($p=0.002$) for women and ($p=0.000$) for men and Poor Communication with the caregiver were significant for the younger group ($p=0.000$). High Costs did not differ statistically between groups ($p>0.05$).

Media effect for inadherencewas significant for elderly men compared to younger men ($p=0.000$) but insignificant for women in both age groups (0,241).For the younger group there was a statistical difference between genders (p=0,000). Concerns for Accuracy of Treatment was significant for women under ≤65 years in groups ($p=0.023$).

The results are given in tables 4,5 and 6.

Discussion

Our study has examined the reasons for medication inadherence for the age group over 65 years and compare them to a younger group. Studies of elderly patients (age ≥ 65 years) have shown that only 20% of patients exhibit "good adherence" defined as 80% or more days that patients had medication available [25]. In our study, 'FORGETFULNESS' was high for the elder age group. We can conclude that age is an important factor for drug inadherence, because increased age seems to be associated with forgetfulness. That patients forget to take their medications is a major reason for inadherence. One study showed that 49.6% of patients mentioned forgetfulness as one reason for inadherence [26]. Close involvement of caregivers is one good way to fight against forgetting. Reminders can be useful working tools; e-mails, text messages, alarmsmay help but may not be practical for every work setting. There is a long-going debate on whether advancing age is a reason for adverse drug reactions. Many studies have shown an association between adverse drug reactions and advancing age [26,27,28]. 'DRUG SIDE EFFECTS' was higher for both sexes in the elder age group. The elder group seems to suffer from drug side effects which may be due to worsening medical conditions by age or due to the high number of drugs used [29,30,31]. Physicians are suggested to go over drug lists carefully (even obsessively) to avoid adverse drug reactions polypharmacia [32].

'POOR COMMUNICATION' with health care provider was significant for the younger age group. The physicians also seem to have their roles in the inadherence equation [33].

Patients who report a good relationship with the physician exhibit substantially improved adherence. The best strategy a physician should manage is to follow a patient-centered approach to involve the patients in the medical decision making process. Elder people may not often understand or remember what they have been told. It has been concluded that many aspects of inadherence are caused by poorly designed medical instructions together with reduced cognitive abilities among elders [34]. Suprisingly; our results display that elder age group does not feel to have a communication problem with the care givers compared to the younger group. This may be a false positive perception of the elder group or the elder group has developed an intimate relationship with the caregivers throughout years despite assumed barriers of cognition.

'MULTIPLE DRUG USE ALREADY' is a common problem for elder age group. It was significant for the elder group as expected. Group characteristics included taking four pills a day. The similarity in the elder group between genders reflects patients number of drugs used distribute proportionally. Elder age group is a specific patient population at risk of complex medication regimens and compromised adherence, therefore physicians should avoid polypharmacy [35]. However; decreasing the number of medications of patients does not always end up with favorable patient outcomes. Learning the drugs patients are taking is a challenging task. The physicians need to ask patients to bring in all of their medications during an outpatient clinic visit [36]. Patients may have difficulty remembering the multiple medications prescribed by their care giver [37].

For the last decade, there has been much debate held by physicians or other health service providers in media about doubts on drug use in Turkey. Currently; many physicians are complaining about their patients' unwillingness to use drugs or refusing the illness. We call this phenomenon all together 'THE MEDIA EFFECT' which we believe will be a strong candidate for further studies. Women in both age groups were equally affected from media and men in advanced ages were affected more than their younger counterpards for inadherence. We can conclude that getting elder and retiring from work; men can get prone to mediatic effects as a result of more hours spent at home.

'REFUSING THE ILLNESS' was another point defined by cases. Adherence is influenced by the patients acceptance of the treatment [38]. The World Health Organization cited personal value judgement, religious and cultural beliefs about treatments and co-morbid mental disorders as reasons for patients not adhering to a certain treatment and refusing the illness[39]. In the elder group,patients did not generally refuse their illnesses. Advanced age seems to bring a rationale to one's health problems; carving out an understanding for the course of the diseases and benefits of the drugs, maybe leading to a submissive acceptance, They learn or know to accept their diseases. Previous item; 'THE MEDIA EFFECT' can be associated with 'REFUSING THE ILLNESS'.

In literature about 20% of patients report doubts about the necessity of their medication [35] .'CONCERNS FOR ACCURACY OF TREATMENT' is a common inadherence problem. Past experiences of ones himself or of his relatives or friends, media effect, poor communication with the physician, and maybe different physician visits all may end up with a doubt about the accuracy of treatment. In the age group for genders this was significant for women under 65 years.

Co-payment of patients may be an inhibiting factor for adherence[40]. 'HIGH COSTS' did not not seem to account as a great option by our cases for inadherence. Statistically, there was no difference between genders or age groups.

The elder group contains mostly retired people with less income. As for our study, it can be concluded that co-payment has a small effect on inadherence for patients in Turkey. Health care decision makers may plan to increase the level of cost sharing, however; this approach may create poorer outcomes to outweigh the savings. It has been shown that copayment reductions caused marked declines in hospitalizations for chronic diseases [41].

This is the first study to assess medication adherence on a cohort of elderly patients and to compare the results with a younger group. We hypothesized to improve the MMAS-8. We wished to extend the scope of inadherence into patients daily routines on a biopsychosocial basis also assessing the actual effects of technology, media and new regulations on health by the government in patients lives.

Our study has a number of limitations. This study was conducted in a single health system, thus results may not be generalizable to all systems. The questionnaire we used is not validated yet and the answers of the patients may not be objective.

Conclusion

The elder age group in this study seems to have developed an understanding of diseases and drugs, cooperate with the health caregiver and is well equipped for inadherence than the younger group. It is best for adherence that physicians follow a patient centered approach to involve the patients in the decision making process. This requires a solid patient-physician relationship built on trust and respect, growing stronger in time. We believe our questionnaire may work as an important tool for future studies.

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Author Contributions

AK Ozsahin conceived paper, oversaw data collection, conducted data analysis, wrote manuscript and approved final version. E Altintas participated in study design, data analysis and interpretation, critically revised manuscript and approved final version. AP Korur participated in study design, data analysis, and interpretation of data and revision of manuscript and approved final version. C Gereklioglu participated in study design, interpretation of data and revision of manuscript and approved final version. AU Aksoyek participated in study design and interpretation of data; critically revised manuscript and approved final version. The authors declare that they have no conflicts of interest.

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List of Table:

Table 1: 4- item Morisky Medication Adherence Scale

1- Do you ever forget to take your medication(s)?
2- At times; are you not careful about taking your medicine?
3- When you feel better do you sometimes stop takin gyour medications(s)?
4- At times; if you feel worse when you take your medication(s), do you stop taking them?
An affirmative answer to any question suggests adherence problem

Table 2: 8- item Morisky Medication Adherence Scale- MMAS-8

1. Do you sometimes forget to take your medication?
2. In the last two weeks was there anyday when you did not take your medication?
3. Have you ever stopped your medication(s) ordecreasedthe dose without warning your doctor because you felt worse when you took them?
4. When you travel or leave the house do you sometimes for get to take your medication(s)?
5. Did you take yourmedicationyesterday?
6. Whenyoufeelyoursymptomsarecontrolled, do yousometimes stop takingyourmedication(s)?
7. Haveyou ever feltdistressedforstrictlyfollowingyourmedication(s)?
8. How often do youhavedifficultytoremembertakingyourmedication(s)
(A)Never / B)Almostnever / C)Sometimes / D)Frequently / E)Always)

Table 3: The Scale Conjured up for 'Reasons for Inadherence'

Reasons
Forgetfulness
Drug Side Effects
Poor Communication with the Physician
Media Effect
Refusing the Illness
Multiple Drug Use Already
Concems forAccuracy of Treatment
High Costs

Table 4: ReasonsforInadherenceandDistribution BetweenGenders (n=900)

Reasons of Patients for Inadherence	Women (n=450) N	%	Men (n=450) n	%	Total n	%	P
Forgetfulness	282	62,67	306	68	588	65,34	0,198
Drug Side Effects	267	59,34	309	68,67	576	64	0,059
PoorCommunication	54	12	21	4,67	75	8,34	0,017
MultipleDrugUseAlready	222	49,34	237	52,67	459	51	0,322
Media Effect	288	64	264	58,67	552	61,34	0,203
RefusingtheIllness	30	6,67	42	9,34	72	8	0,262
ConcemsforAccuracy of Treatment	39	8,67	21	4,67	60	6,67	0,123
High Costs	33	7,34	24	5,34	57	6,34	0,318

Table 5: Distribution of ReasonsforInadherenceBetween Age Groupsfor Men in BothStudies

Reasons of Patientsfor Inadherence	≤ 65 YEARS n=392 n	%	≥65 YEARS n=450 n	%	TOTAL n=842 n	%	P
Forgetfulness	83	21,1	306	68,0	389	46,2	0,000
Drug Side Effects	59	15,0	309	68,6	368	43,7	0,000
PoorCommunication	119	30,3	21	4,6	141	16,7	0,000
MultipleDrugUseAlready	69	17,6	237	52,6	306	36,3	0,000
Media Effect	66	16,8	264	58,6	330	39,2	0,000
RefusingtheIllness	111	28,3	42	9,34	153	18,2	0,000
ConcemsforAccuracy of Treatment	22	5,6	21	4,6	43	5,1	0,172
High Costs	22	5,6	24	5,3	46	5,4	0,255

Table 6: Distribution of Reasons for Inadherence Between Age Groups for Women in Both Studies

Resaons of Patients for Inadherence	≤ 65 YEARS n=400 n	%	≥65 YEARS n=450 n	%	TOTAL n=850 n	%	P
Forgetfulness	191	47,7	282	62,6	473	55,6	0,001
Drug Side Effects	132	33,0	267	59,3	399	46,9	0,000
PoorCommunication	147	36,7	54	12	201	23,6	0,000
MultipleDrugUseAlready	82	20,5	222	49,3	304	35,7	0,000
Media Effect	241	60,2	288	64	529	62,2	0,241
RefusingtheIllness	65	16,2	30	6,6	95	11,1	0,002
ConcemsforAccuracy of Treatment	62	15,5	39	8,67	101	11,8	0,023