



Bibliography of Medication Compliance

Barriers related to medication noncompliance

Publications sorted by author name

Peer-reviewed papers

1. Al-Adawi, S.; Al-Salmy, H.; Martin, R. G.; Al-Naamani, A.; Prabhakar, S.; Deleu, D.; Moosa, S., and Dorvlo, A. S. Patient's perspective on epilepsy: self-knowledge among Omanis. *Seizure*. 2003 Jan; 12(1):11-8.
Keywords: Adolescent/ Adult/ Automobile Driving: psychology/ Employment: psychology/ Epilepsy: *psychology: therapy/ Female/ Health Knowledge, Attitudes, Practice/ Humans/ Male/ Oman/ Patients: *psychology/ Pilot Projects/ Questionnaires/ Sampling Studies
Abstract: Improving patients' knowledge has been suggested to improve their symptoms and prognosis. Very little is known about epileptic patient's knowledge of their illness in cross-cultural settings. This pilot study investigated what Omani patients know about their disorder. Patients attending a tertiary hospital completed a structured knowledge questionnaire to elicit information pertaining to aetiology, safety, compliance with medication regimes, legal and employment issues concerning epilepsy. Although correctly endorsing issues related to their medication, this cross-cultural sample was found to have limited knowledge about their condition. In particular, most patients were unable to give accurate indications of epilepsy, neither were they able to give correct responses to questions pertaining to safety and compliance. There is a need for improving patient's knowledge. As with other chronic disorders, people with epilepsy in Oman should receive systematic health education about how to manage the condition most effectively.
2. Alebiosu, C. O.; Raimi, T. H.; Ayodele, O. E.; Bassi, P. U.; Salako, B. L.; Olutoyin, A. A., and Abbas, B. A. Reasons for non-compliance with antihypertensive medication in southwest Nigeria. *Trop Doct*. 2004 Apr; 34(2):127-8.
Keywords: Antihypertensive Agents: *therapeutic use/ Cross-Sectional Studies/ *Health Knowledge, Attitudes, Practice/ Humans/ Hypertension: *drug therapy: epidemiology/ Nigeria: epidemiology/ Patient Education/ Treatment Refusal: *statistics & numerical data
3. Alm-Roijer, C.; Stagmo, M.; Uden, G., and Erhardt, L. Better knowledge improves adherence to lifestyle changes and medication in patients with coronary heart disease. *Eur J Cardiovasc Nurs*. 2004 Dec; 3(4):321-30.
Keywords: Coronary Disease: *drug therapy: *nursing/ Female/ Follow-Up Studies/ Health Knowledge, Attitudes, Practice/ Humans/ *Life Style/ Male/ Middle Aged/ *Patient Compliance/ *Patient Education/ Research Support, Non-U.S. Gov't/ Risk Factors/ Statistics, Nonparametric/ Sweden
Abstract: BACKGROUND: Many patients with coronary heart disease (CHD) are not managed adequately, and we often fail to reach treatment targets. AIM: To investigate if knowledge of risk factors for CHD, measured by a questionnaire, would show any relation to advice to compliance to lifestyle changes to attain treatment goals and adherence to drug therapy. METHOD: Men and women <71 years who had had a cardiac event were screened consecutively (509) from the medical records. Responders (392) were interviewed, examined and received a questionnaire. Three hundred and forty-seven patients answered the questionnaire regarding their general

knowledge of risk factors for CHD, compliance to lifestyle changes to attain treatment goals and adherence to drug therapy. RESULTS: There were statistically significant correlations between general knowledge about risk factors for CHD and compliance to certain lifestyle changes: weight, physical activity, stress management, diet, attainment of lipid level goals and the likelihood of taking prescribed blood pressure-lowering drugs. General knowledge of risk factors had no correlation to blood glucose or blood pressure levels nor on smoking habits or treatment patterns for prescribed lipid- and blood glucose-lowering drugs. CONCLUSION: Knowledge correlates to patient behaviour with respect to some risk factors, which should be recognised in preventive programs.

4. Aubeny, E.; Buhler, M.; Colau, J. C.; Vicaut, E.; Zadikian, M., and Childs, M. Oral contraception: patterns of non-compliance. The Coraliance study. *Eur J Contracept Reprod Health Care*. 2002 Sep; 7(3):155-61.
Keywords: Adolescent/ Adult/ Cohort Studies/ Comparative Study/ Contraceptives, Oral: *administration & dosage/ Cross-Sectional Studies/ Drug Administration Schedule/ Female/ France/ Health Knowledge, Attitudes, Practice/ Humans/ Middle Aged/ Patient Compliance/ Patient Education/ Pregnancy/ Pregnancy Rate: trends/ Probability/ Retrospective Studies/ Risk Assessment/ Treatment Refusal: *statistics & numerical data
Abstract: OBJECTIVES: To determine the number of times women failed to take their oral contraceptive medication and their behavior in response to a missed pill. Another objective was to determine the potential benefit provided by a continuously administered oral contraceptive compared with an oral contraceptive involving a pill-free interval during a 6-month period. METHODS: Healthy women were enrolled in a cohort study; their contraceptive practices were followed by their gynecologists. Data were collected at inclusion using cross-sectional method with retrospective data collection for the previous 6 months and, more specifically, on their previous or their current menstrual cycle. Women on the pill were asked to specify the number of times and precise time at which they missed one or more pills and what they did in response to missing a pill. RESULTS: A total of 617 gynecologists enrolled and followed 3316 patients from six geographic areas throughout France. The mean age of patients was 30 years. Duration of oral contraceptive use was 8 years. During their previous cycle, 23% of women (n = 737) missed a pill at least once. Among women on the pill involving a treatment-free interval, 42% of instances of missing a pill occurred during the first week following the treatment-free interval. In response to missing a pill, patients read the product information leaflet (39%) or asked someone's advice (28%), mainly their gynecologist (63%) or their family physician (18%). Almost one-third of women did not take any specific measures. CONCLUSIONS: Patients on a discontinuous oral contraceptive regimen tended to miss a pill during the first week of treatment. Prescription of a continuous regimen without a treatment-free interval may improve compliance.
5. Balkrishnan, R. The importance of medication adherence in improving chronic-disease related outcomes: what we know and what we need to further know. *Med Care*. 2005 Jun; 43(6):517-20.

Keywords: Chronic Disease: *drug therapy: economics/ Drug Monitoring/ Humans/ Interviews/ Patient Compliance: *statistics & numerical data/ Patient Education/ Pharmacists/ *Prescriptions, Drug/ Self Administration: *utilization/ *Treatment Outcome

6. Barber, N.; Parsons, J.; Clifford, S.; Darracott, R., and Horne, R. Patients' problems with new medication for chronic conditions. *Qual Saf Health Care*. 2004 Jun; 13(3):172-5.

Keywords: Adolescent/ Adult/ Aged/ Aged, 80 and over/ Chronic Disease: *drug therapy/ Comparative Study/ Drug Information Services/ England/ Female/ Health Care Surveys/ Humans/ Interviews/ Longitudinal Studies/ Male/ Middle Aged/ Patient Compliance: psychology: *statistics & numerical data/ Patient Education/ Pharmacies/ Questionnaires/ Research Support, Non-U.S. Gov't

Abstract: OBJECTIVES: To assess patients' adherence to new medication for a chronic condition (and whether non-adherence was intentional), patients' problems with their medication, and their further information needs. METHODS: A longitudinal survey with data collection at 10 days and 4 weeks was performed on 258 patients recruited from 23 community pharmacies in south east England. Patients were eligible to participate if they were starting a new chronic medication and were either 75 years or older or had one of the following chronic conditions: stroke, coronary heart disease, asthma, diabetes, and rheumatoid arthritis. At each time point a semi-structured telephone interview was conducted and a postal questionnaire was sent. MAIN OUTCOME MEASURES: Self-reported adherence, causes of non-adherence, problems with medication, information needs. RESULTS: Sixty seven (30%) of 226 patients still taking their medication at 10 days and 43 of 171 (25%) still taking their medication at 4 weeks were non-adherent. At 10 days 55% of the non-adherence was unintentional and the remainder was intentional; these proportions were similar at 4 weeks. 138 of 208 (66%) participants still taking their new medication at 10 days reported at least one problem with it. 137 of 226 patients (61%) expressed a substantial and sustained need for further information at 10 days and 88 of 171 (51%) at 4 weeks. Several patients who were adherent or reported no problems at 10 days were non-adherent or had problems at 4 weeks. CONCLUSIONS: A significant proportion of patients newly started on a chronic medication quickly become non-adherent, often intentionally so. Many have problems with their medication and information needs. Patients need more support when starting on new medication for a chronic condition and new services may be required to provide this.

7. Barr, R. G.; Somers, S. C.; Speizer, F. E., and Camargo, C. A. Jr. Patient factors and medication guideline adherence among older women with asthma. *Arch Intern Med*. 2002 Aug 12-2002 Aug 26; 162(15):1761-8.

Keywords: Adult/ Age Factors/ Aged/ Asthma: *drug therapy: epidemiology: *psychology/ Comorbidity/ Comparative Study/ Female/ Follow-Up Studies/ Guideline Adherence: *standards/ Humans/ Middle Aged/ Multivariate Analysis/ *Patient Compliance/ Questionnaires/ Research Support, U.S. Gov't, P.H.S./ Severity of Illness Index/ Smoking: adverse effects/ United States: epidemiology/ Women's Health Notes: CORPORATE NAME: National Asthma Education and Prevention Program

(NAEPP).

Abstract: **BACKGROUND:** Asthma guidelines are well established but often followed poorly. Determinants of adherence among older persons may differ from younger persons and have not been well characterized. **OBJECTIVES:** To assess adherence to asthma medication guidelines among older women with asthma and evaluate predictors of adherence with emphasis on asthma characteristics, comorbid medical conditions, work-related factors, social supports, caregiving, and emotional well-being. **METHODS:** We assessed adherence to the National Asthma Education and Prevention Program medication guidelines among participants in the Nurses' Health Study who reported a physician diagnosis of asthma and reconfirmed the diagnosis on a separate questionnaire, excluding those with chronic obstructive pulmonary disease. **RESULTS:** Among 121 700 participants in the Nurses' Health Study, 5107 reported physician-diagnosed asthma meeting inclusion criteria. Mean +/- SD age was 63 +/- 7 years in 1998. Adherence with asthma medication guidelines was 57% for mild persistent, 55% for moderate persistent, and 32% for severe persistent asthma (P =.001). In multivariate analysis, nonadherence was associated with severe asthma, increasing age, lower socioeconomic status, current smoking, earlier onset of asthma, and number of comorbid medical conditions. Measures of social isolation, caregiving, and emotional well-being were not associated with nonadherence. **CONCLUSIONS:** Asthma is undertreated among older women, even those who are health care professionals. Women with advanced age and severe asthma were particularly at risk. Given that the greatest increase in asthma mortality has occurred among older women, further research is needed to examine physician prescribing patterns and patient beliefs in this vulnerable population.

8. Baune, B. T.; Aljeesh, Y. I., and Bender, R. The impact of non-compliance with the therapeutic regimen on the development of stroke among hypertensive men and women in Gaza, Palestine. *Saudi Med J.* 2004 Nov; 25(11):1683-8.
Keywords: Acute Disease/ Adult/ Aged/ Antihypertensive Agents: *administration & dosage/ Arabs: *statistics & numerical data/ Cerebrovascular Accident: *epidemiology: prevention & control/ Diet, Sodium-Restricted/ Female/ Humans/ Hypertension: *drug therapy: epidemiology/ Life Style/ Logistic Models/ Male/ Middle Aged/ Middle East: epidemiology/ Risk Factors/ Statistics/ Treatment Refusal: *statistics & numerical data
Abstract: **OBJECTIVE:** Hypertension and stroke are 2 major public health problems worldwide. Several biological and non-biological risk factors for stroke have been identified in the past. Little is known regarding risk factors for stroke among the Arabic population in Gaza. To identify potential risk factors we investigated compliance with the therapeutic regimen and life style factors which may increase the risk for stroke. **METHODS:** To research this study question, a pair matched case control study was conducted in Gaza Strip (Shefa Hospital, Nasser Hospital, Khan Younis Hospital, and related primary health care clinics) in 2001 (from January through to December) among 112 patients, who had been hospitalized for acute stroke and history of hypertension, and 224 controls with history of hypertension from primary health care clinics. **RESULTS:** Conditional logistic regression models show significant associations between stroke and medication not taking as prescribed (odds ratio (OR)=6.07; 95% confidence interval (CI)=1.53, 24.07), using excessive salt at meals (OR=4.51; 95%

CI=2.05, 9.90), eating diet high in fat (OR=4.67; 95% CI=2.09, 10.40), and high levels of stress (OR=2.77; 95% CI=1.43, 5.38). No significant association between smoking and the development of stroke (OR=2.12; 95 CI 0.82, 5.51) was found. Regular physical exercise was a protective factor (OR=0.26; 95% CI=0.12, 0.57). CONCLUSION: Our results on risk factors for stroke confirm several other studies. In future programs on health promotion among hypertensive men and women in Gaza these modifiable risk factors could be addressed by health education strategies.

9. Bender, B. G. Overcoming barriers to nonadherence in asthma treatment. *J Allergy Clin Immunol.* 2002 Jun; 109(6 Suppl):S554-9.
Keywords: Adult/ Asthma: *therapy/ Child/ Humans/ Motivation/ *Patient Compliance/ Patient Education/ Physician-Patient Relations/ Self Care
Abstract: Inadequate patient adherence to prescribed treatment regimens is a major cause of poor clinical outcomes in the treatment of asthma. Among children with asthma, adherence rates are often below 50%. Multiple treatment-, clinician-, and patient-related barriers prevent the achievement of satisfactory levels of adherence. Treatment-related barriers include prolonged and complex regimens, adverse effects, cost, and delayed onset of action. Clinician-related barriers include difficulty in scheduling, treatment by one different care giver after another, perceived clinician disinterest, and time constraints. Patient-related barriers include mild or severe asthma, poor understanding of the need for treatment, insufficient confidence in the clinician or medication, the presence of psychological problems, and low motivation to change behavior. Although all of these factors must be addressed to maximize adherence, patient motivation may be the most critical. This task falls primarily to clinicians (physicians, nurses, staff), and it requires thorough patient and care giver education, more frequent patient contact, and the development of a patient-clinician partnership dedicated to the effective treatment of asthma.

10. Berg, J.; Blumberg, E. J.; Sipan, C. L.; Friedman, L. S.; Kelley, N. J.; Vera, A. Y.; Hofstetter, C. R., and Hovell, M. F. Somatic complaints and isoniazid (INH) side effects in Latino adolescents with latent tuberculosis infection (LTBI). *Patient Educ Couns.* 2004 Jan; 52(1):31-9.
Keywords: Acculturation/ Adolescent/ Adolescent Behavior: ethnology/ *Adolescent Psychology/ Analysis of Variance/ Antitubercular Agents: *adverse effects/ California/ Child/ Female/ Health Knowledge, Attitudes, Practice/ Hispanic Americans: education: *ethnology/ Humans/ Isoniazid: *adverse effects/ Least-Squares Analysis/ Longitudinal Studies/ Male/ Needs Assessment/ Nursing Methodology Research/ Patient Compliance: *ethnology/ Patient Education/ Questionnaires/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./ Sex Factors/ *Tuberculosis, Pulmonary: drug therapy: ethnology
Abstract: This study examined the potential effects of INH side effects and non-specific somatic complaints on medication adherence in 96 Latino adolescents participating in a controlled trial designed to increase isoniazid (INH) adherence. These participants (who received usual medical care) were interviewed monthly over 9 months. Participants were questioned regarding medication taking, the frequency of 15 INH-related side effects from the Physician's Desk Reference (PDR) [1], and 21 non-

specific somatic complaints. Participants were aged 12-19 years, 53.1% were male, 66.7% were born in Mexico, 73% had no health insurance, and 52.5% were classified as bicultural. Approximately 70% of participants experienced at least one side effect during the trial. Side effects that occurred while taking INH were not significantly related to total number of pills taken; somatic complaints that occurred during 9 months of INH were significantly negatively related to cumulative adherence. Females reported significantly more somatic complaints at baseline than males.

11. Berry, D.; Bradlow, A., and Bersellini, E. Perceptions of the risks and benefits of medicines in patients with rheumatoid arthritis and other painful musculoskeletal conditions. *Rheumatology (Oxford)*. 2004 Jul; 43(7):901-5.
Keywords: Adolescent/ Adult/ Aged/ Analysis of Variance/ Antirheumatic Agents: *adverse effects/ Arthritis, Rheumatoid: drug therapy: *psychology/ *Attitude/ Comparative Study/ Female/ Humans/ Male/ Middle Aged/ Patient Compliance/ Questionnaires/ Risk Assessment/ Time Factors
Abstract: OBJECTIVES: To examine beliefs about medication risks and benefits in patients attending a specialist rheumatology clinic for pain-related conditions. METHODS: Eighty-one patients (37 first attendees and 44 existing clinic patients) completed a written questionnaire which asked about current treatments, perceived effectiveness, main risks and benefits, and compliance. RESULTS: Existing clinic patients perceived medications to be more effective and more risky than did the new patients, although both groups rated risks to be moderately low. The main perceived risks were adverse side-effects, although patients reported only moderately low levels of experiencing such effects. CONCLUSIONS: In contrast to some other studies, many of our patients were aware of medication risks and were prepared to accept them provided benefits were seen to be high. Existing clinic patients were more aware of risks and benefits, and reported higher compliance levels than new patients, possibly as a result of the hospital education programme. Future studies should evaluate the effects of the programme more systematically.
12. Chapman, J. R. Compliance: the patient, the doctor, and the medication? *Transplantation*. 2004 Mar 15; 77(5):782-6.
Keywords: Graft Rejection: *drug therapy: epidemiology/ Humans/ *Patient Compliance/ *Physician-Patient Relations/ Risk Factors/ *Transplants
Abstract: Noncompliance can be defined as covert nonadherence to prescribed medication used for the prophylaxis of allograft rejection and threatening impaired kidney histology or function. It is an increasingly significant long-term problem in transplantation as the failure rates from other causes have diminished. Formal approaches to diagnosis, prophylaxis, and treatment, together with a greater understanding of what should be regarded as a syndrome, are thus increasingly important components of reducing the chronic attrition of graft function and survival. It is possible to classify noncompliant behavior using four facets of the syndrome: timing, frequency, origin, and diagnostic certainty. There are a number of different ways of approaching diagnosis, such as observation of behavior through pill counting or electronic measurements of pill container opening; blood level measurement of relevant drugs; physical examination; and observation of the consequences. However, the only

certainty of diagnosis comes from direct patient admission of nonadherence to the prescribed immunosuppression. It is possible to define the highest risk patients through assessment of a number of patient-, drug-, and physician-associated variables, and then to influence the outcome through education, compliance monitoring, and simplified regimens targeted to the highest risk patients. It is important for all transplant units to address the issues raised by noncompliance if the chronic loss of allografts is to be reduced.

13. Chew, L. D.; Bradley, K. A.; Flum, D. R.; Cornia, P. B., and Koepsell, T. D. The impact of low health literacy on surgical practice. *Am J Surg.* 2004 Sep; 188(3):250-3.
Keywords: Adolescent/ Adult/ Age Factors/ Aged/ Ambulatory Surgical Procedures: education/ Cohort Studies/ Educational Status/ Female/ Health Knowledge, Attitudes, Practice/ *Hospitals, Veterans/ Humans/ Male/ Middle Aged/ *Outpatient Clinics, Hospital/ *Patient Compliance/ Patient Education: *methods/ Preoperative Care: methods/ *Reading/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, Non-P.H.S.
Abstract: BACKGROUND: We sought to determine the prevalence of low health literacy (LHL) among patients in a preoperative clinic, the characteristics associated with LHL, and the association between LHL and adherence to preoperative instructions. METHODS: We conducted a cohort study and interviewed patients at a VA preoperative clinic. We administered a health literacy test and collected sociodemographic information. When patients returned for their scheduled surgical procedures, adherence to preoperative instructions was assessed. RESULTS: Of 332 participants, 12% (n = 40) had LHL. Low health literacy was more prevalent among older adults (more than 65 years) compared with those under age 65. Patients with LHL were more likely to be nonadherent to preoperative medication instructions (odds ratio = 1.9; 95% confidence interval: 0.8 to 4.8), but this was of borderline statistical significance. CONCLUSIONS: Low health literacy was common among older patients and appeared to be associated with lower adherence to preoperative medication instructions.
14. Clark, T.; Sleath, B., and Rubin, R. H. Influence of ethnicity and language concordance on physician-patient agreement about recommended changes in patient health behavior. *Patient Educ Couns.* 2004 Apr; 53(1):87-93.
Keywords: Adolescent/ Adult/ Aged/ Attitude of Health Personnel/ Clinical Competence: standards/ *Communication Barriers/ Cooperative Behavior/ European Continental Ancestry Group: education: *ethnology/ Health Behavior: *ethnology/ Hispanic Americans: education: *ethnology/ Humans/ Internal Medicine: education/ Internship and Residency/ Life Style: ethnology/ Middle Aged/ New Mexico/ Patient Compliance: *ethnology/ Patient Education/ *Physician-Patient Relations/ Physicians, Family: education: psychology/ Questionnaires/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S.
Abstract: The purpose of this study is to examine the association of ethnicity and language concordance with physician-patient agreement about physicians' recommendations for patient health behavior in the following areas: diet, exercise, medication, smoking, stress, and weight. Twenty-seven resident physicians at the

University of New Mexico's internal medicine and family practice clinics and 427 of their patients participated. Random effects models were used to estimate the influence of ethnicity and language concordance on whether patients and physicians agreed about specific recommended changes in patient behavior. Ethnicity concordance was not significantly associated with physician-patient agreement. Language concordance positively influenced the likelihood of agreement about exercise but negatively influenced agreement about medications. The lowest percentage of agreement occurred in the area of medication regimens (60%). The results from this study indicate that language is an important barrier to physician-patient agreement, while ethnicity concordance has no effect. However, the influence of whether the physician and patient speak the same language on agreement is unclear and warrants further research.

15. Coombs, T.; Deane, F. P.; Lambert, G., and Griffiths, R. What influences patients' medication adherence? Mental health nurse perspectives and a need for education and training. *Int J Ment Health Nurs.* 2003 Jun; 12(2):148-52.
Keywords: Adult/ Female/ Humans/ Male/ *Nurses/ *Patient Compliance/ *Patient Education/ Psychiatric Nursing: *methods/ Research Support, Non-U.S. Gov't
Abstract: This paper explores the role of mental health nurses in medication adherence and their perspective of what influences patients' medication non-adherence. Forty-eight mental health nurses with active patient caseloads completed a comprehensive questionnaire assessing a number of variables related to medications, including whom they felt was primarily responsible for monitoring the side-effects of medication, their knowledge skills and confidence in dealing with medication adherence and their prior education and training in medication adherence strategies. Lack of patient insight was endorsed as the strongest influence on patient non-adherence. Over 84% of nurses indicated they did not have any prior education or training in medication adherence strategies. Implications of the findings for education and training and nurses' roles in supporting medication adherence are discussed.
16. Cote, M. C.; Ligeti, R.; Cutler, B. S., and Nelson, P. R. Management of hyperlipidemia in patients with vascular disease. *J Vasc Nurs.* 2003 Jun; 21(2):63-7; quiz 68-9.
Keywords: Aged/ Arteriosclerosis: *complications/ Female/ Humans/ Hyperlipidemia: complications: *prevention & control/ Male/ Massachusetts/ Multivariate Analysis/ Peripheral Vascular Diseases: *complications/ Retrospective Studies/ Risk
Abstract: Atherosclerosis contributing to cardiovascular disease is the leading cause of death in the United States. It is also the major cause of peripheral arterial disease (PAD). Although there is substantial evidence that aggressive treatment of hyperlipidemia improves the outcome of patients with coronary artery disease (CAD), relatively little attention has been directed toward lipid control in patients with PAD. The National Cholesterol Education Program (NCEP) has established guidelines for treatment of lipids in patients with atherosclerotic disease. The purpose of this study was to determine the effectiveness of current lipid management practices in patients electively admitted for peripheral vascular surgery and to explore methods to improve compliance with NCEP guidelines. The past medical/surgical history, risk factors for atherosclerosis, and medication regimen including lipid medications were obtained from a retrospective review of the medical records of 105 consecutive patients

scheduled for an elective vascular procedure. Lipid profiles were obtained as part of their routine preoperative assessment and the results were compiled and compared with established NCEP guidelines to determine the level of compliance in our PAD population. Eighty-five of the 105 patients had lipid profiles recorded in the medical record. Only 42% of patients were at or below the recommended goal of less than 100 mg/dL for low-density lipoprotein (LDL). Greater than half of patients had previous diagnosis of atherosclerosis or had previous bypass including coronary artery bypass surgery. Despite the strong emphasis on lipid reduction, especially LDL cholesterol, only a minority of patients admitted for peripheral vascular surgery were at the recommended NCEP goal. More aggressive evaluation and treatment of lipid disorders in patients with PAD seems warranted.

17. Davies, M. The reality of glycaemic control in insulin treated diabetes: defining the clinical challenges. *Int J Obes Relat Metab Disord*. 2004 Sep; 28 Suppl 2:S14-22.
Keywords: Blood Glucose: *analysis: metabolism/ Delayed-Action Preparations/ Diabetes Mellitus, Type 1: *drug therapy: metabolism/ Diabetes Mellitus, Type 2: *drug therapy: metabolism/ Disease Progression/ Drug Administration Schedule/ Humans/ Hypoglycemia: chemically induced/ Hypoglycemic Agents: adverse effects: metabolism: *therapeutic use/ Insulin: adverse effects: metabolism: *therapeutic use/ Patient Compliance/ Patient Education/ Patient Selection
Abstract: The benefits of good glycaemic control in both type I and type II diabetes mellitus are undoubtedly proven. Most national bodies have recommended glycaemic targets, with an HbA(1c) to achieve between 6.5 and 7.5%. However, it is well known that even in clinical trials, and routinely in clinical practice, the majority of patients fail to achieve optimal glycaemic control. The reasons for this failure are complex and multifactorial. Healthcare providers often delay the initiation and intensification of insulin unnecessarily. This stems from a fear of causing hypoglycaemia or weight gain in patients, from doubts about patients' self-care abilities and/or from inadequate resources to provide the necessary structured education to support patient self-management. Patients may be poorly adherent to treatment advice-particularly behavioural aspects such as self-monitoring, diet and exercise-although this may itself derive from inadequate access to effective diabetes education. There is, however, a limit to what can be achieved with existing exogenous insulin therapies due to their imperfect pharmacokinetic and pharmacodynamic profiles. Prominent among these imperfections is the problem of variability of effect from injection to injection with basal insulin formulations. Improvements in this area should benefit control and tolerability.
18. Demmer, C. Attitudes toward HIV protease inhibitors and medication adherence in an inner city HIV population. *AIDS Patient Care STDS*. 2003 Nov; 17(11):575-80.
Keywords: Adult/ African Americans/ Attitude to Health: *ethnology/ Female/ HIV Infections: *drug therapy: ethnology: psychology/ HIV Protease Inhibitors: *therapeutic use/ Hispanic Americans/ Humans/ Male/ Middle Aged/ New York City: epidemiology/ Patient Compliance: ethnology: *statistics & numerical data/ Pilot Projects/ Rural Health
Abstract: The objective of this pilot study was to examine attitudes toward protease inhibitors (PIs) among HIV-infected individuals and to assess the relationship between PI attitudes and adherence to PIs. Respondents were recruited from four AIDS service

organizations in New York City; the total sample consisted of 97 HIV-infected individuals who were taking a PI. The sample consisted largely of African Americans and Latinos from inner city areas, and most had a low level of education. Adherence was suboptimal, with more than 50% of respondents failing to take their PI medications exactly as prescribed within the previous month. Individuals who had recently used illegal drugs within the past 6 months were more likely to be nonadherent to PIs. Those who were not adherent to PI medications reported greater concern about the side effects of PIs and were more likely to believe that it was acceptable to skip doses of PIs.

19. Depoortere, E.; Guthmann, J. P.; Sipilanyambe, N.; Nkandu, E.; Fermon, F.; Balkan, S., and Legros, D. Adherence to the combination of sulphadoxine-pyrimethamine and artesunate in the Maheba refugee settlement, Zambia. *Trop Med Int Health*. 2004 Jan; 9(1):62-7.

Keywords: Antimalarials: *therapeutic use/ Artemisinins: *therapeutic use/ Child, Preschool/ Drug Combinations/ Drug Therapy, Combination/ Family: psychology/ Female/ Health Education: methods/ Humans/ Infant/ Malaria, Falciparum: *drug therapy: epidemiology/ Male/ Patient Compliance: *statistics & numerical data/ Pyrimethamine: *therapeutic use/ Questionnaires/ Refugees: *statistics & numerical data/ Research Support, Non-U.S. Gov't/ Sesquiterpenes: *therapeutic use/ Sulfadoxine: *therapeutic use/ Treatment Refusal: statistics & numerical data/ Zambia: epidemiology

Abstract: Artemisinin-based combination therapy (ACT) is one strategy recommended to increase cure rates in malaria and to contain resistance to *Plasmodium falciparum*. In the Maheba refugee settlement, children aged 5 years or younger with a confirmed diagnosis of uncomplicated falciparum malaria are treated with the combination of sulphadoxine-pyrimethamine (1 day) and artesunate (3 days). To measure treatment adherence, home visits were carried out the day after the last treatment dose. Patients who had any treatment dose left were considered certainly non-adherent. Other patients' classification was based on the answers to the questionnaire: patients whose caretakers stated the child had received the treatment regimen exactly as prescribed were considered probably adherent; all other patients were considered probably non-adherent. Reasons for non-adherence were assessed. We found 21.2% (95% CI [15.0-28.4]) of the patients to be certainly non-adherent, 39.4% (95% CI [31.6-47.6]) probably non-adherent, and 39.4% (95% CI [31.6-47.6]) probably adherent. Insufficient explanation by the dispenser was identified as an important reason for non-adherence. When considering the use of ACT, the issue of patient adherence remains challenging. However, it should not be used as an argument against the introduction of ACT. For these treatment regimens to remain efficacious on a long-term basis, specific and locally adapted strategies need to be implemented to ensure completion of the treatment.

20. Dobbels, F.; Van Damme-Lombaert, R.; Vanhaecke, J., and De Geest, S. Growing pains: non-adherence with the immunosuppressive regimen in adolescent transplant recipients. *Pediatr Transplant*. 2005 Jun; 9(3):381-90.

Keywords: Adolescent/ Graft Rejection: psychology/ Graft Survival/ Humans/

Immunosuppressive Agents: *therapeutic use/ Kidney Transplantation: immunology/
Patient Education/ Risk Factors/ Social Support/ *Transplants/ Treatment Outcome/
*Treatment Refusal: psychology: statistics & numerical data

Abstract: One-year graft and patient survival are better in adolescent transplant recipients (age 11-19 years) than in younger (age < 11 years) pediatric transplant recipients. However, several groups found that long-term outcomes (> i.e. 5 year post-transplant) in the adolescent age group are significantly worse than in younger transplant recipients. A behavioral factor that could explain an important part of the poorer clinical outcome in adolescent transplant recipients is non-compliance with medication taking. Adolescents, like all organ transplant recipients irrespective of their age, must adhere to a life-long immunosuppressive regimen in addition to other aspects of their therapeutic regimen. Therefore, adolescent transplant recipients, as all transplant patients, should be regarded as a chronically ill patient population in whom behavioral and psychosocial management is equally important as state-of-the-art medical management. This paper provides an overview of the current knowledge on prevalence, clinical consequences, and risk-factors for non-compliance with the immunosuppressive regimen in adolescent transplant recipients and offers some suggestions for adolescent-tailored interventions to improve medication adherence.

21. Enriquez, M.; Lackey, N. R.; O'Connor, M. C., and McKinsey, D. S. Successful adherence after multiple HIV treatment failures. *J Adv Nurs*. 2004 Feb; 45(4):438-46. Keywords: Adult/ Anti-HIV Agents: *therapeutic use/ Decision Making/ Female/ HIV Infections: *drug therapy: psychology/ Health Behavior/ Humans/ Male/ Middle Aged/ Midwestern United States/ Motivation/ Patient Compliance: *psychology/ Patient Education/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./ Self Care: psychology
- Abstract: BACKGROUND: Non-adherence to human immunodeficiency virus (HIV) medications often results in irreparable drug resistance and poor outcomes. Hence, care providers generally think that treatment of HIV disease should be delayed until a person is 'ready' to adhere. However, little research has focused on understanding the process that results in readiness for successful adherence. AIM: The aim of this phenomenological study was to describe and understand the experience and decision-making processes of people who became adherent to their HIV medication regimens after previously failing treatment because of non-adherence. METHOD: A Husserlian phenomenological approach was taken, and in-depth interviews were analysed using Giorgi's method of phenomenological description and analysis. FINDINGS: Thirteen HIV-positive men and women who had previously failed two or more treatment regimens because of non-adherence were purposefully selected from two infectious diseases clinics in the Midwest region of the United States. They had achieved and sustained adherence to their HIV medications for 1 year or longer without formal intervention. All participants experienced a 'trigger' event preceding the process that led to the ability to incorporate lifestyle and health behaviour changes necessary for successful adherence. Factors associated with the process leading to adherence were: changing attitudes towards HIV medication, finding the right health care provider, creating the right support system, getting control of life and having goals. CONCLUSIONS: This study demonstrated that HIV-positive individuals who had been

non-adherent and had been viewed as 'difficult to treat' nonetheless successfully adhered to treatment once they became 'ready'. Findings from this study implicate that readiness may be a necessary component for successful adherence, particularly in HIV-positive individuals who have previously failed treatment. Understanding the relationship between the phenomenon of readiness and subsequent HIV treatment adherence has implications for clinical decision-making and for development of interventions that enhance adherence and prevent HIV drug resistance.

22. Farquharson, L.; Noble, L. M.; Barker, C., and Behrens, R. H. Health beliefs and communication in the travel clinic consultation as predictors of adherence to malaria chemoprophylaxis. *Br J Health Psychol.* 2004 May; 9(Pt 2):201-17.
Keywords: Adolescent/ Adult/ Aged/ Antimalarials: *therapeutic use/ *Communication/ Female/ Great Britain/ *Health Education/ Health Knowledge, Attitudes, Practice/ Humans/ Logistic Models/ Malaria: *prevention & control/ Male/ Middle Aged/ Patient Compliance: *psychology/ Prospective Studies/ *Travel
Abstract: OBJECTIVES: The objectives were, first, to determine whether adherence to malaria prophylaxis could be predicted by (i) health beliefs specified by the Health Belief Model and the Theory of Planned Behaviour, and (ii) communication during the consultation in a travel clinic; and secondly, to examine the impact of the consultation in changing travellers' health beliefs. DESIGN: A prospective study using regression analysis. METHODS: The participants were 130 consecutive travellers attending a travel medicine clinic. Health beliefs were measured pre- and post-consultation. The consultations were coded from audiotape using the Roter Interaction Analysis System and a content analysis method recording discussion about malaria and prophylaxis. Adherence was assessed by a follow-up telephone interview. RESULTS: Perceived susceptibility to malaria, perceived benefits of medication and intentions to adhere increased significantly as a result of the consultation, and the perceived permanent nature of side effects reduced significantly. At follow-up (N = 107), 62% reported full adherence, 25% partial adherence and 12% poor/no adherence. A multinomial logistic regression analysis revealed that perceived benefits of medication, length of stay, health professional discussion about adherence and travellers' questions and statements independently predicted reported adherence. CONCLUSIONS: Health beliefs and communication significantly predicted adherence in this setting. The findings also suggested qualitative differences between travellers who adhered fully, partially or poorly. Although the clinic consultation had a positive impact, emphasizing benefits of medication and resolving potential barriers to adherence could improve adherence in the population.
23. Foley, K. A.; Vasey, J.; Berra, K.; Alexander, C. M., and Markson, L. E. The Hyperlipidemia: Attitudes and Beliefs in Treatment (HABIT) survey for patients: results of a validation study. *J Cardiovasc Nurs.* 2005 Jan-2005 Feb 28; 20(1):35-42.
Keywords: Antilipemic Agents: therapeutic use/ Communication/ Factor Analysis, Statistical/ Female/ *Health Knowledge, Attitudes, Practice/ Humans/ *Hyperlipidemia: drug therapy: psychology/ Life Style/ Male/ Middle Aged/ Patient Compliance: *psychology: statistics & numerical data/ Patient Education/ Predictive Value of Tests/ Professional-Patient Relations/ Psychometrics/ Questionnaires: *standards/ Research

Support, Non-U.S. Gov't/ Treatment Outcome

Abstract: Patient adherence with cholesterol-lowering medications is a crucial component in helping patients achieve lipid goals. Understanding patient attitudes and beliefs about hyperlipidemia and its pharmacological treatments may be useful in improving patient adherence with their treatment plan. The objectives of this study were to develop a theoretically based, statistically reliable, and valid survey instrument for measuring the attitudes and beliefs of patients towards hyperlipidemia and its treatments, and to determine whether the attitudes measured were associated with patient-reported medication adherence. We assessed the reliability of the instrument through an examination of the internal consistency and factor structure of 8 attitude constructs including attitudes about the effectiveness of medications and the quality of doctor-patient communication. Validity was assessed through correlations among the attitudes and the relationship between the attitudes and the number of medication adherence problems the patient experienced in the past month. Internal consistency scores for the 8 constructs ranged from .46 to .82. Factor loadings indicated that the individual items belonged to their respective constructs, as hypothesized. The validity of the instrument was demonstrated by significant relationships between 4 of the attitudinal constructs and self-reported medication adherence problems. This study provides preliminary evidence of the reliability and validity of the HABIT (Hyperlipidemia: Attitudes and Beliefs in Treatment) patient survey of attitudes about the treatment of hyperlipidemia.

24. Gaga, M.; Papageorgiou, N.; Zervas, E.; Gioulekas, D., and Konstantopoulos, S. Control of asthma under specialist care: is it achieved? *Chest*. 2005 Jul; 128(1):78-84. Keywords: Adult/ Anti-Asthmatic Agents: *therapeutic use/ Asthma: *drug therapy/ Chi-Square Distribution/ Cross-Sectional Studies/ Female/ Humans/ Logistic Models/ Male/ *Patient Satisfaction/ Quality of Life/ Questionnaires/ Research Support, Non-U.S. Gov't/ *Specialties, Medical/ Treatment Outcome
- Abstract: BACKGROUND: The goal of asthma treatment is control of asthma and good quality of life for asthmatic patients; however, many asthmatic patients experience symptoms and limitations. STUDY OBJECTIVES: To examine treatment outcome in asthmatic patients under specialist care. DESIGN: Multicenter, cross-sectional study. SETTING: Four large outpatient asthma clinics in teaching hospitals in three Greek cities. PATIENTS: Three hundred seventy-eight randomly selected patients with mild or moderate asthma (265 female patients; mean age, 42.3 years). INTERVENTIONS: None. MEASUREMENTS AND RESULTS: Patients completed a questionnaire structured with eight domains covering patient characteristics, drug use at baseline and during exacerbations, regular follow-up, emergency visits, asthma control, symptoms, and limitations. Results show that the majority of patients have symptoms and limitations in their physical and social activities and have frequent exacerbations, while > 40% of patients think that their asthma is not well controlled. Most of our patients receive preventive medication (primarily inhaled corticosteroids, but less so long-acting beta2-agonists [LABAs] and leukotriene antagonists), increase their use of medication in case of exacerbations and have regular follow-up. However, the report shows that 48% of patients tried to reduce their medication dose, a fact implying that compliance is not always good. CONCLUSIONS: These data indicate that the goals of asthma

treatment are not achieved, even under specialist care. Perhaps more effort should be invested in patient education while an increase in the use of LABAs and leukotriene antagonists, medications that have been shown to prevent exercise-induced bronchoconstriction and improve quality of life, may help better asthma outcomes.

25. Gillissen, A. and Lecheler, J. [Corticophobia in asthma]. *Med Klin (Munich)*. 2003 Aug 15; 98(8):417-22.
Keywords: Administration, Inhalation/ Adolescent/ Adult/ Anti-Asthmatic Agents: administration & dosage: *adverse effects/ Asthma: *drug therapy: *psychology/ *Attitude to Health/ Child/ Child, Preschool/ Cortisone: administration & dosage: *adverse effects/ English Abstract/ *Fear/ Health Knowledge, Attitudes, Practice/ Health Surveys/ Humans/ Middle Aged/ Patient Education/ Treatment Refusal: *psychology
Abstract: BACKGROUND: Steroid phobia is regarded as a common phenomenon in the management of asthma, eventually contributing to poor compliance in these patients. The aim of this survey was to examine asthma patients (adults and children with their parents) and general practitioners (GPs) if inhaled corticosteroids are a matter of concern. METHODS: The physicians were asked what they assume, their patients would answer. To accomplish this, 407 physicians (202 GPs without subspecialty, 103 internists, 102 pediatricians) and 346 patients (245 adults, 101 children, 109 parents) were questioned using a structured questionnaire. RESULTS: In contrast to patients, physicians rated inhaled corticosteroids as the medication the patients wanted primarily to get rid of (in parenthesis physician answers): adult asthmatics 17% (55%), children 19%, parents 26% (55%). The answer "side effects" to the question "What do you dislike most in your asthma medication?" was given as follows: physicians 58%, adult asthmatics 42%, children 10%, parents 14%, and pediatricians 46%. Major lack of knowledge regarding the use and function of asthma medication was excluded in these patients as well as in the children's parents. The request for further information regarding their disease varied: adult asthmatics 57%, children 66%, parents 90%. CONCLUSION: Our survey indicates that physicians may overestimate patients' concern to use inhaled corticosteroids in asthma therapy. For patients rejecting corticosteroid therapy other antiinflammatory treatment options must be considered as an alternative individually.
26. Givon, S. M.; Liberman, N.; Klang, S., and Kahan, E. A survey of primary care physicians' perceptions of their patients' use of complementary medicine. *Complement Ther Med*. 2003 Dec; 11(4):254-60.
Keywords: *Attitude of Health Personnel/ Complementary Therapies: adverse effects: *utilization/ Family Practice/ Female/ Herb-Drug Interactions/ Humans/ Male/ Medical History Taking/ Middle Aged/ Physician-Patient Relations/ Self Medication: adverse effects
Abstract: PURPOSE: To study the perceptions and attitudes of primary care physicians concerning their patients' use of complementary medicine. METHODS: A questionnaire was distributed to all 165 primary care physicians attending a routine continuing-medicine education program. Items included physicians' estimated rates of patient utilization of complementary medicine or herbal remedies and of patient reportage of

such use; physicians' knowledge about side effects and interactions of herbal remedies; and frequency with which physicians questioned their patients on the use of complementary medicine and herbal remedies. RESULTS: The compliance rate was 90.0% (n=150). Sixty-eight percent of physicians estimated that up to 15% of their patients use complementary medicine; 58% always or often asked their patients about it; 50% estimated that 10% of patients report use of complementary medicine, and 60% estimated the same rate for herbal remedies; 51% believed that herbal remedies have no or only mild side effects; more than 70% claimed that they had little or no knowledge about what herbal remedies are; 24% never referred patients for complementary medicine, and 69% did so occasionally. Twenty-five percent had some training in complementary medicine, and 31% practiced some kind of complementary medicine. Most of the physicians believed that people turn to alternative methods when they are dissatisfied with conventional medicine. CONCLUSIONS: Physicians underestimate the rate of complementary medicine use by patients, suggesting that many patients do not report such use to their physician. Since alternative treatments are potentially harmful and may interact with conventional medications, physicians should be encouraged to communicate with patients about complementary medicine in general and herbal remedies in particular, and they should regularly include questions about their use when taking histories. They should also inform themselves about risks of alternative treatments particularly with herbal remedies, and have access to appropriate information systems.

27. Golin, C. E.; Liu, H.; Hays, R. D.; Miller, L. G.; Beck, C. K.; Ickovics, J.; Kaplan, A. H., and Wenger, N. S. A prospective study of predictors of adherence to combination antiretroviral medication. *J Gen Intern Med.* 2002 Oct; 17(10):756-65.
Keywords: Adult/ Anti-HIV Agents: *therapeutic use/ Antiretroviral Therapy, Highly Active/ Cohort Studies/ Female/ HIV Infections: *drug therapy: psychology/ Health Knowledge, Attitudes, Practice/ Humans/ Male/ Multivariate Analysis/ *Patient Compliance/ Patient Participation/ Prospective Studies/ Research Support, U.S. Gov't, P.H.S.
Abstract: OBJECTIVE: Adherence to complex antiretroviral therapy (ART) is critical for HIV treatment but difficult to achieve. The development of interventions to improve adherence requires detailed information regarding barriers to adherence. However, short follow-up and inadequate adherence measures have hampered such determinations. We sought to assess predictors of long-term (up to 1 year) adherence to newly initiated combination ART using an accurate, objective adherence measure. DESIGN: A prospective cohort study of 140 HIV -infected patients at a county hospital HIV clinic during the year following initiation of a new highly active ART regimen. MEASURES AND MAIN RESULTS: We measured adherence every 4 weeks, computing a composite score from electronic medication bottle caps, pill count and self-report. We evaluated patient demographic, biomedical, and psychosocial characteristics, features of the regimen, and relationship with one's HIV provider as predictors of adherence over 48 weeks. On average, subjects took 71% of prescribed doses with over 95% of patients achieving suboptimal (<95%) adherence. In multivariate analyses, African-American ethnicity, lower income and education, alcohol use, higher dose frequency, and fewer adherence aids (e.g., pillboxes, timers) were

independently associated with worse adherence. After adjusting for demographic and clinical factors, those actively using drugs took 59% of doses versus 72% for nonusers, and those drinking alcohol took 66% of doses versus 74% for nondrinkers. Patients with more antiretroviral doses per day adhered less well. Participants using no adherence aids took 68% of doses versus 76% for those in the upper quartile of number of adherence aids used. CONCLUSIONS: Nearly all patients' adherence levels were suboptimal, demonstrating the critical need for programs to assist patients with medication taking. Interventions that assess and treat substance abuse and incorporate adherence aids may be particularly helpful and warrant further study.

28. Gonzalez, B.; Lupon, J.; Parajon, T.; Urrutia, A.; Altimir, S.; Coll, R.; Prats, M., and Valle, V. Nurse evaluation of patients in a new multidisciplinary Heart Failure Unit in Spain. *Eur J Cardiovasc Nurs*. 2004 Apr; 3(1):61-9.
- Keywords: Adult/ Aged/ Aged, 80 and over/ Bias (Epidemiology)/ Female/ *Health Knowledge, Attitudes, Practice/ Heart Failure, Congestive: nursing: *prevention & control: psychology/ Hospital Units: organization & administration/ Humans/ Male/ Middle Aged/ Nursing Assessment: *methods: standards/ Nursing Evaluation Research/ Patient Care Team: organization & administration/ Patient Compliance: psychology: statistics & numerical data/ Patient Education: standards/ Questionnaires: *standards/ *Self Care: methods: psychology/ Spain
- Abstract: AIM: To know how compliant patients are, how much they know about their disease and treatment, and how their level of self-care is. METHODS: We performed a short nurse questionnaire during the first visit to a new Heart Failure Unit. RESULTS: Three hundred and twenty-four patients have been evaluated, with a mean age of 65.4 years. Ninety-eight patients (30%) knew and understood the performance of the heart and 85 (29%) understood the disease. Two-hundred and nineteen (67%) knew more than three signs of worsening symptoms. One-hundred and five (32%) knew all the names of the medication they were taking and 74 (23%) knew the action of these medications. Two-hundred and ninety-four (91%) said they were taking all the medication prescribed and 229 (71%) carried on always their written prescription. Sixty-two percent of patients controlled weight only at the medical visit and only 14% controlled weight more than once a week. Fifty-nine (18%) controlled blood pressure more than once a week, while 45% controlled it only at the medical visit. Only 33% of patients were said always to follow sodium restricted diet. The great majority (93%) never smoked and only very rarely took alcohol (83%). While only 18 (6%) performed some kind of physical exercise, the majority (83%) did walking and daily living activities. The 85% of patients with ischemic heart disease knew how to use sublingual nitro-glycerine. When subgroups were analysed, we found significant differences by age, gender and previous specialist management. Younger patients, men and patients referred from the Cardiology outpatient clinic showed a higher level of knowledge and understanding of several aspects of disease and treatment, and performed more physical activities, compared to older patients, women and patients referred from other departments. On the contrary, older patients showed better adherence with sodium restriction, and, as women, better smoking and drinking habits. CONCLUSION: There is a lot of work to do in nurse-guided education of patients with heart failure, although treatment compliance, use of nitro-glycerine and abstinence of smoking and alcohol

intake seem to be quite assumed by the majority of our patients. Significant differences in knowledge and behaviour were evident between younger and older patients, between men and women, and relating to previous specialist management. In spite of that, we found no differences in treatment compliance.

29. Graney, M. J.; Bunting, S. M., and Russell, C. K. HIV/AIDS medication adherence factors: inner-city clinic patient's self-reports. *Tenn Med.* 2003 Feb; 96(2):73-8.
Keywords: Adult/ Anti-HIV Agents: *therapeutic use/ Female/ HIV Infections: *drug therapy/ Humans/ Male/ Middle Aged/ *Patient Compliance: psychology/ Patient Education/ Poverty Areas/ Research Support, Non-U.S. Gov't/ Risk Factors/ Social Support/ Tennessee
Abstract: OBJECTIVE: To document common facilitators of, and barriers to, HIV/AIDS medication regimen adherence and to identify facilitators and barriers significantly correlated to attainment of higher vs. lower adherence. DESIGN: Data were collected using semi-structured interviews. SETTING: An outpatient clinic serving as the regional treatment center for HIV disease. PATIENTS: A purposive sample of 57 clinic patients was enrolled and completed the study. MAIN OUTCOME MEASURES: Self-reported adherence was measured using a visual analog scale and specified as higher or lower adherence at the 80% level, the approximate median. RESULTS: Many barriers to adherence were more prevalent in the lower adherence group, including complexity of the medication regimen and experiencing side effects. Lower adherence patients also had more problems with privacy and interference with social life and work or school. Patients in the higher adherence group were more concerned with forgetting as an adherence barrier. In general, social support, motivation to avoid AIDS, perceiving the health care practitioner as a facilitator, knowledge of medications, and keeping schedules were identified as factors enhancing adherence. CONCLUSIONS: The high prevalence of many barriers shows that the health care provider has an important role in patient education and support to accomplish increased adherence. Fear and avoidance behaviors in the lower adherence group contrasted with the increased concern with forgetting in the higher adherence group. Communicating treatment advances with patients may help more patients to address many barriers to higher adherence.
30. Happell, B.; Manias, E., and Roper, C. Wanting to be heard: mental health consumers' experiences of information about medication. *Int J Ment Health Nurs.* 2004 Dec; 13(4):242-8.
Keywords: Antipsychotic Agents: adverse effects: *therapeutic use/ Focus Groups/ Humans/ Mental Disorders: *drug therapy/ *Patient Compliance: psychology/ *Patient Education/ Patient Participation/ *Professional-Patient Relations/ Victoria
Abstract: The complexities accompanying the prescription of antipsychotic medication for people experiencing a mental illness have been extensively documented in the literature. The views and experiences of consumers of mental health services, however, are almost entirely absent. This paper describes the findings of a qualitative study undertaken to examine the experiences of consumers, specifically in relation to education and decision making with regards to medication. The findings from a focus group conducted with consumers (n = 9) revealed an overall dissatisfaction with

information provided and the opportunity to participate in decision making. Data analysis revealed four major themes: information to consumers; acknowledgement and recognition of consumers; roles of health professionals; and the experience of wellness and adherence. The findings suggest the need for significant change if the goals of the Third National Mental Health Plan are to be realized.

31. Haslam, C.; Brown, S.; Atkinson, S., and Haslam, R. Patients' experiences of medication for anxiety and depression: effects on working life. *Fam Pract.* 2004 Apr; 21(2):204-12.
Keywords: Adolescent/ Adult/ Anxiety Disorders: *drug therapy: psychology/ Attention/ Depression: *drug therapy: psychology/ Employment: psychology/ Family Practice: methods/ Female/ Focus Groups/ *Health Knowledge, Attitudes, Practice/ Humans/ Male/ Middle Aged/ Occupational Health Services/ Patient Education/ Patient Satisfaction/ *Psychology, Industrial/ Psychotropic Drugs: *therapeutic use/ Qualitative Research/ Quality of Life/ Research Support, Non-U.S. Gov't/ Treatment Refusal/ Work: psychology
Abstract: BACKGROUND: and objectives. The prevalence of depression and anxiety has increased in recent years, leading to extensive use of medication. This study used a qualitative, in-depth approach to investigate patients' experiences of taking medication prescribed for these conditions. Sampling from a range of occupational sectors, the research explored the impact of medication on working life. METHODS: The research involved nine focus groups with sufferers of anxiety and depression to investigate the personal experiences of mental ill-health and the impact of psychotropic drugs. A further three focus groups were conducted with staff in human resources, personnel, occupational health, and health and safety departments, to explore the organizational perspectives on psychotropic medication in the workplace. Focus groups were held at Loughborough University and at workplace settings throughout the UK. Results were presented to an expert panel (comprising practitioners and researchers in health care and occupational health) to consider implications for practice. RESULTS: Physical symptoms associated with anxiety and depression included: nausea, headaches, dizziness, trembling, insomnia and lack of energy. Psychological symptoms involved: poor concentration, emotional distress and lack of motivation. Non-compliance was widespread due to side effects, lack of improvement in symptoms or because medication made patients feel worse. Patients did not feel well informed about their medication. People took less than the prescribed amount or stopped taking the medication. Concerns about dependency caused patients to cease medication prematurely. CONCLUSION: Patients felt ill informed about their medication and would have welcomed more information. Drawing on the results, the authors outline areas for improvement in the care of patients with anxiety and depression.
32. Hazlett-Stevens, H.; Craske, M. G.; Roy-Byrne, P. P.; Sherbourne, C. D.; Stein, M. B., and Bystritsky, A. Predictors of willingness to consider medication and psychosocial treatment for panic disorder in primary care patients. *Gen Hosp Psychiatry.* 2002 Sep-2002 Oct 31; 24(5):316-21.
Keywords: Adult/ Attitude to Health/ Combined Modality Therapy/ Comorbidity/ Female/ Humans/ Male/ Panic Disorder: drug therapy: epidemiology: *therapy/ Patient

Compliance/ *Primary Health Care/ Prospective Studies/ Questionnaires/ Research Support, U.S. Gov't, P.H.S./ Stress Disorders, Post-Traumatic: epidemiology: therapy
Abstract: The purpose of this investigation was to identify demographic and clinical patient characteristics related to willingness to consider panic disorder treatments in the primary care setting. Given the prevalence of anxiety disorders and the increased provision of mental health treatments in general medical settings, patients were selected from primary care settings. An unselected sample of 4,198 patients completed a brief questionnaire containing questions about demographic characteristics, physical health status, and symptoms of panic disorder, social phobia and PTSD. The 1,043 patients indicating a recent panic attack episode answered additional questions about their willingness to consider both medication and psychosocial forms of intervention for panic. Of these panic patients, 64% reported willingness to consider medication and 67% reported willingness to consider a psychosocial intervention for their panic. Logistic regression analyses for these panic patients revealed that willingness to consider medication treatment for panic was associated with older age, lower education, poorer health status and the presence of social phobia and/or PTSD symptoms. In addition, Asian and African American patients were less likely than Caucasian patients to indicate willingness to consider medication treatment for their panic. However, only the presence of comorbid social phobia and PTSD symptoms predicted willingness to consider a psychosocial intervention. Results suggest that acceptability of psychosocial treatment is unrelated to demographic and physical health factors, while primary care patients with certain demographic characteristics, good physical health, or who suffer from fewer comorbid mental health conditions may need additional encouragement to begin medication treatment for panic.

33. Hinkin, C. H.; Castellon, S. A.; Durvasula, R. S.; Hardy, D. J.; Lam, M. N.; Mason, K. I.; Thrasher, D.; Goetz, M. B., and Stefaniak, M. Medication adherence among HIV+ adults: effects of cognitive dysfunction and regimen complexity. *Neurology*. 2002 Dec 24; 59(12):1944-50.

Keywords: Adult/ Aged/ Anti-HIV Agents: *administration & dosage: therapeutic use/ *Antiretroviral Therapy, Highly Active/ Blotting, Western/ Cognition Disorders: diagnosis: etiology: *psychology/ Education/ Enzyme-Linked Immunosorbent Assay/ Female/ HIV Seropositivity: *drug therapy: *psychology/ Humans/ Intelligence Tests/ Male/ Middle Aged/ Neuropsychological Tests/ Patient Compliance: *psychology/ Regression Analysis/ Research Support, U.S. Gov't, P.H.S./ Sex Factors

Abstract: BACKGROUND: Although the use of highly active antiretroviral therapy in the treatment of HIV infection has led to considerable improvement in morbidity and mortality, unless patients are adherent to their drug regimen (i.e., at least 90 to 95% of doses taken), viral replication may ensue and drug-resistant strains of the virus may emerge. METHODS: The authors studied the extent to which neuropsychological compromise and medication regimen complexity are predictive of poor adherence in a convenience sample of 137 HIV-infected adults. Medication adherence was tracked through the use of electronic monitoring technology (MEMS caps). RESULTS: Two-way analysis of variance revealed that neurocognitive compromise as well as complex medication regimens were associated with significantly lower adherence rates.

Cognitively compromised participants on more complex regimens had the greatest difficulty with adherence. Deficits in executive function, memory, and attention were associated with poor adherence. Logistic regression analysis demonstrated that neuropsychological compromise was associated with a 2.3 times greater risk of adherence failure. Older age (>50 years) was also found to be associated with significantly better adherence. CONCLUSIONS: HIV-infected adults with significant neurocognitive compromise are at risk for poor medication adherence, particularly if they have been prescribed a complex dosing regimen. As such, simpler dosing schedules for more cognitively impaired patients might improve adherence.

34. Ho, J.; Bender, B. G.; Gavin, L. A.; O'Connor, S. L.; Wamboldt, M. Z., and Wamboldt, F. S. Relations among asthma knowledge, treatment adherence, and outcome. *J Allergy Clin Immunol.* 2003 Mar; 111(3):498-502.

Keywords: Adolescent/ Anti-Inflammatory Agents: *administration & dosage/ Asthma: *drug therapy: *psychology/ Child/ Female/ *Health Knowledge, Attitudes, Practice/ Humans/ Longitudinal Studies/ Male/ Metered Dose Inhalers/ *Patient Compliance/ Psychometrics: methods/ Questionnaires/ Research Support, U.S. Gov't, P.H.S./ Treatment Outcome

Abstract: BACKGROUND: Asthma knowledge is frequently assumed to be a prerequisite for optimal asthma treatment. However, the validity of existing asthma knowledge questionnaires has not been rigorously examined, and no contemporary measure of asthma knowledge has received widespread acceptance. OBJECTIVE: To construct and examine the psychometric properties of an asthma knowledge instrument, and its association with demographic and psychosocial variables, asthma medication adherence, and treatment outcome. METHODS: A 25-item Asthma Knowledge Questionnaire was developed with input from national pediatric asthma experts. Parents of 155 children with asthma completed the Asthma Knowledge Questionnaire as well as demographic, family functioning, and home environment measures. Asthma outcomes and adherence with inhaled medication was measured across 12 months. RESULTS: Despite the many steps taken to develop a strong measure of asthma knowledge, reliability was relatively poor. There was also no association between asthma knowledge and treatment adherence or outcomes. Furthermore, asthma knowledge was not a unidimensional construct and was not a simple function of education. CONCLUSIONS: Findings from this study, in combination with previous studies of asthma knowledge questionnaires, suggest that the construction of a simple self-report asthma knowledge instrument for use as a primary outcome measure demonstrating mastery of asthma self-management skills may not be achievable.

35. Holmstrom, I. M. and Rosenqvist, U. Misunderstandings about illness and treatment among patients with type 2 diabetes. *J Adv Nurs.* 2005 Jan; 49(2):146-54.

Keywords: Adult/ Aged/ Aged, 80 and over/ *Attitude to Health/ Blood Glucose Self-Monitoring: psychology/ Diabetes Complications: psychology/ Diabetes Mellitus, Type 2: blood: *psychology: *therapy/ Diabetic Diet: psychology/ Exercise: psychology/ Female/ Humans/ Male/ Middle Aged/ Patient Compliance/ Patient Education/ Research Support, Non-U.S. Gov't/ Sweden/ Videotape Recording

Abstract: AIMS: This paper reports a study whose aim was to describe the misunderstandings that Swedish patients with type 2 diabetes have about their illness and treatment. **BACKGROUND:** It is well known that patients with type 2 diabetes need extensive support and education to learn to manage and live with their illness. However, a Swedish survey has shown that only 34% of these patients had good metabolic control. Despite intensive education and support, misunderstandings about both the illness and treatment seem to be common. Furthermore, patients are currently complaining that health care services sometimes obstruct rather than support self-care and learning. **METHODS:** We videotaped 18 authentic encounters between a patient with diabetes and a physician, or a diabetes nurse. Patients then viewed the video and reflected on what took place during the consultation. Video-recordings and transcribed reflections were analysed thematically. **RESULTS:** Five themes emerged from the analysis: (a) Type 2 diabetes is not 'real diabetes'; (b) Complications - horror visions or suppression; (c) Self-monitoring of blood glucose and medication is a routine, not a learning tool; (d) Diet - the important thing is to reduce fat and (e) 'Physical exercise is good, they tell us'. Four of the 18 patients showed no misunderstandings. Misunderstandings of diabetes and its treatment were thus common and numerous, despite regular checkups and good access to care. The patients adhered to prescribed regimens but did not know why they performed many routines or how they could benefit from them. **CONCLUSION:** The results show that misunderstandings of illness and treatment were common. We suggest that diabetes educators should base their education on this variation of understanding, using a phenomenological approach to learning. Reflecting on this kind of varied experiences can be a powerful tool to help people to move from 'novice to expert' and apply basic routines to new situations.

36. Hope, C. J.; Wu, J.; Tu, W.; Young, J., and Murray, M. D. Association of medication adherence, knowledge, and skills with emergency department visits by adults 50 years or older with congestive heart failure. *Am J Health Syst Pharm.* 2004 Oct 1; 61(19):2043-9.
- Keywords:** Adult/ Cardiovascular Agents: *therapeutic use/ Drug Labeling/ Drug Packaging/ Emergency Service, Hospital: *statistics & numerical data/ Female/ Heart Failure, Congestive: *drug therapy/ Humans/ Linear Models/ Male/ Patient Compliance: *statistics & numerical data/ Patient Education: *statistics & numerical data/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./ Treatment Outcome
- Abstract:** **PURPOSE:** The association of medication adherence, knowledge, and skills with emergency department (ED) visits by patients 50 years of age or older with congestive heart failure (CHF) was studied. **METHODS:** The patients in this study were enrolled in the usual care group of an ongoing trial of patients with CHF to determine the effects of a pharmacy-based intervention on relevant outcomes. Participants' medication knowledge and skills were assessed during individual interviews. Medication knowledge assessed patients' knowledge of the dosage, frequency, and indication of each of their CHF medications. The medications skills assessment evaluated patients' dexterity (ability to open medication bottles), literacy (ability to read labels), and ability to distinguish colors of tablets and capsules. Medication adherence to CHF drugs was calculated from electronic monitors and prescription-refill records over a six-month period. The primary outcomes of this study were the numbers of all-

cause cardiovascular and CHF-specific ED visits during a six-month period. Log-linear regression models were used to analyze the effects of medication knowledge, skill, and adherence on ED visits. RESULTS: Sixty-one patients participated in this study. Multivariate log-linear models adjusted for demographic variables showed that lower medication adherence ($p < 0.001$) and an inability to read standard prescription and auxiliary labels ($p = 0.002$) were associated with an increased number of cardiovascular-related ED visits. Knowledge of the prescribed dose was associated with CHF-specific ED visits ($p < 0.001$). CONCLUSION: Greater medication knowledge, skills, and adherence were associated with fewer ED visits among patients 50 years of age or older with CHF in an urban, teaching medical center.

37. Ickovics, J. R. and Meade, C. S. Adherence to antiretroviral therapy among patients with HIV: a critical link between behavioral and biomedical sciences. *J Acquir Immune Defic Syndr.* 2002 Dec 15; 31 Suppl 3:S98-102.
Keywords: Antiretroviral Therapy, Highly Active: *psychology/ Demography/ Drug Administration Schedule/ Health Services Accessibility/ Humans/ *Patient Compliance/ Patient Education/ Physician-Patient Relations/ Public Health/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./ Self-Help Groups
Abstract: Rapid advances in biomedical science, such as pharmaceutical developments for HIV disease, must be integrated with advances in behavioral science to further our understanding of medication adherence. This article evaluates the current state of the science in adherence to antiretroviral therapy for persons with HIV. The primary objectives are to 1) identify critical determinants of adherence, and 2) describe interventions to improve adherence. Adherence is a complex dynamic behavior influenced by characteristics of the patient, treatment regimen, disease, patient-provider relationship, and clinical setting. Therefore, the most promising interventions are multifaceted and target different locations in this matrix simultaneously. Unfortunately, nonadherence remains a formidable barrier in the management of HIV, resulting in the development of resistance and drug failure. Moreover, adherence is a public health concern, with implications for the transmission of HIV in general and the transmission of drug-resistant strains of HIV specifically. Despite substantial attention to adherence in recent years, much more remains to be done to better understand and promote adherence to antiretroviral therapy through effective interventions. From this integration of biomedical and behavioral science, effective clinical interventions can be developed and implemented to enhance the health of patients with HIV.
38. Ingersoll, K. S. and Heckman, C. J. Patient-clinician relationships and treatment system effects on HIV medication adherence. *AIDS Behav.* 2005 Mar; 9(1):89-101.
Keywords: Adult/ Anti-HIV Agents: *administration & dosage/ Comorbidity/ Drug Therapy, Combination/ Female/ HIV Infections: *drug therapy: epidemiology: psychology/ Health Education/ Health Knowledge, Attitudes, Practice/ Humans/ Male/ Mental Disorders: epidemiology: psychology/ Middle Aged/ Patient Compliance: *psychology: statistics & numerical data/ *Physician-Patient Relations/ Prognosis/ Regression Analysis/ Research Support, N.I.H., Extramural/ Research Support, U.S. Gov't, P.H.S./ Socioeconomic Factors/ Stress, Psychological: complications/ Substance-Related Disorders: epidemiology: psychology/ Treatment Outcome

Abstract: The study objectives were to determine the impact of the patient-clinician relationship on patient adherence to HIV medication, to identify which aspects of the patient-clinician relationship and the treatment system influenced adherence, and to determine which of these variables remained important when the impact of mental distress and substance abuse were considered. The design was a cross-sectional study using a sample of 120 HIV+ clinic patients. The Primary Care Assessment Survey (PCAS) assessed the clinician-patient relationship and the treatment system. The Composite International Diagnostic Inventory-Short Form (CIDI-SF) screened for mental disorders, and the Brief Substance Abuse History Form measured recent and remote substance use. Patient adherence was assessed using five markers including 3 interview-elicited self-reports, 1 medical chart review, and 1 summary score. Logistic regression analyses identified independent predictors of each adherence behavior. PCAS scores contributed to all five models, and their effects persisted when mental distress and substance abuse were considered. Adherence behaviors are explained by a variety of factors and should be assessed using multiple methods. Further study to illuminate the mechanisms of action of the clinician-patient relationship on adherence to HIV medication is warranted.

39. Irani, F.; Dankert, M.; Brensinger, C.; Bilker, W. B.; Nair, S. R.; Kohler, C. G.; Kanis, S. J.; Turetsky, B. I.; Moberg, P. J.; Ragland, J. D.; Gur, R. C.; Gur, R. E., and Siegel, S. J. Patient attitudes towards surgically implantable, long-term delivery of psychiatric medicine. *Neuropsychopharmacology*. 2004 May; 29(5):960-8.

Keywords: Adult/ Age Factors/ Attitude/ Data Collection/ Depressive Disorder, Major: drug therapy: psychology/ *Drug Implants/ Education/ Ethnic Groups/ Female/ Humans/ Male/ Mental Disorders: *drug therapy: psychology/ Middle Aged/ Patient Compliance: psychology/ Psychotic Disorders: drug therapy: psychology/ Psychotropic Drugs: *administration & dosage: *therapeutic use/ Questionnaires/ Research Support, Non-U.S. Gov't/ Sex Factors

Abstract: The introduction of surgically implantable medication delivery systems provides psychiatric patients with reversible, uninterrupted access to medication for up to 14 months. This study designed and administered a survey to assess patients' attitudes and beliefs towards illness, medication, and this potential new treatment method. The survey included questions about demographics, insight and attitudes towards illness, current and past medication adherence, attitudes towards psychiatric and nonpsychiatric medications, and understanding and attitudes towards surgical implants. The sample of 206 psychiatric patients was almost equally split between favorably and unfavorably considering implants. Patients favorable towards implants ascribed forgetting and failure to refill medication on time as the reasons for missing doses, recognized the benefits of medication in general, and understood that the implant would be inserted under the skin. Favorable consideration of implants was positively correlated with the desire to avoid adverse consequences of missing medicine, stay well, avoid the need for daily oral medications, and decrease family burden. Unfavorable consideration of implants was related to a preference to take medication orally, concern about feeling controlled, unwillingness to try something new, and not understanding that the implant would be placed under the skin. Demographic variables, past/current medications, specific diagnosis, and illness severity did not

influence the decision. This survey elucidates patients' attitudes and beliefs towards illness, medication, and surgical implants. The results indicate that a significant proportion of patients recognize the difficulties of medication adherence and the need for better methods to attain therapeutic response. Thus, the study provides impetus for future work in this area.

40. Jeste, S. D.; Patterson, T. L.; Palmer, B. W.; Dolder, C. R.; Goldman, S., and Jeste, D. V. Cognitive predictors of medication adherence among middle-aged and older outpatients with schizophrenia. *Schizophr Res.* 2003 Sep 1; 63(1-2):49-58.
Keywords: Affect/ Aged/ Antipsychotic Agents: *therapeutic use/ Cognition Disorders: diagnosis: *epidemiology: etiology/ Diagnostic and Statistical Manual of Mental Disorders/ Humans/ Middle Aged/ Neuropsychological Tests/ Patient Compliance: *statistics & numerical data/ Predictive Value of Tests/ Prospective Studies/ Questionnaires/ Regression Analysis/ Research Support, U.S. Gov't, Non-P.H.S./ Research Support, U.S. Gov't, P.H.S./ Schizophrenia: complications: diagnosis: *drug therapy/ Severity of Illness Index
Abstract: OBJECTIVE: Medication nonadherence presents a considerable problem in patients with schizophrenia. There are limited and conflicting data on the association of cognitive impairment with antipsychotic nonadherence. In this study, we evaluated the correlation of patients' scores on Mattis' Dementia Rating Scale (DRS; total and subscale scores) with scores on the Medication Management Ability Assessment (MMAA), a performance-based measure of medication management. METHODS: Participants included 110 outpatients with schizophrenia or schizoaffective disorder. Each was evaluated using the MMAA role-play tasks and the DRS. Patients also completed the Drug Attitude Inventory (DAI), and the PANSS (Positive And Negative Syndrome Scale). RESULTS: Age, DAI score, and DRS scores were all correlated with MMAA performance. In a stepwise regression analysis, only DRS scores were predictive of MMAA performance. Among the DRS subscales, conceptualization and memory were the best statistical predictors of MMAA performance. CONCLUSION: Cognitive functions, especially conceptualization and memory, were the strongest patient-related predictors of his or her ability to manage medications, over and above the effects of age, gender, education level, symptom severity, and attitudes toward medications. These results suggest a need for intervention studies focused on improving, or at least compensating for, specific cognitive deficits such as those in memory and conceptualization among patients with schizophrenia in order to improve their ability to manage medications.
41. Kampman, O.; Kiviniemi, P.; Koivisto, E.; Vaananen, J.; Kilkku, N.; Leinonen, E., and Lehtinen, K. Patient characteristics and diagnostic discrepancy in first-episode psychosis. *Compr Psychiatry.* 2004 May-2004 Jun 30; 45(3):213-8.
Keywords: Adult/ Age Factors/ Diagnosis, Differential/ Educational Status/ Female/ Humans/ Interview, Psychological/ Male/ Multivariate Analysis/ Predictive Value of Tests/ Psychiatric Status Rating Scales/ Psychotic Disorders: *diagnosis/ Schizophrenia: diagnosis/ Sensitivity and Specificity/ Social Support
Abstract: Despite the operational criteria in diagnostic systems there is still marked diversity between clinical and research diagnoses in populations with psychotic

disorders. The objective of the current study was to explore the association of patient-related factors with diagnostic agreement between clinical diagnoses and Schedules for Clinical Assessment in Neuropsychiatry (SCAN-2) diagnoses in first-episode psychosis. The sample included 80 consecutive patients. As explanatory variables we used demographic characteristics (gender, age, living circumstances, education, and social activities), measures of psychopathology (Positive and Negative Symptom scale [PANSS], Hamilton Depression Scale, Global Assessment of Functioning Scale [GAF], and Strauss-Carpenter Scale), duration of untreated psychosis, and diagnostic category according to SCAN-2 interview. The overall agreement value between the clinical and research diagnoses was 0.55 (kappa). In the whole sample low scores on the PANSS negative subscale, low level of education, and high score on the PANSS item for delusions predicted diagnostic discrepancy. Acute and transient psychotic disorder as a research diagnosis predicted diagnostic agreement. In the schizophrenia group, young age and lack of social activities predicted diagnostic agreement. Bivariate comparisons of treatment compliance, perceived medication side effects, or negative attitudes towards treatment showed no associations with diagnostic agreement. The results confirm some of the findings in the few previous studies. The diagnosis of schizophrenia is likely to be delayed and there is a need for further education with clinicians in recognizing the symptoms of schizophrenia.

42. Kampman, O.; Laippala, P.; Vaananen, J.; Koivisto, E.; Kiviniemi, P.; Kilku, N., and Lehtinen, K. Indicators of medication compliance in first-episode psychosis. *Psychiatry Res.* 2002 May 15; 110(1):39-48.

Keywords: Adult/ Adverse Drug Reaction Reporting Systems/ Antipsychotic Agents: adverse effects: *therapeutic use/ Awareness/ Female/ Finland/ Follow-Up Studies/ Humans/ Male/ Middle Aged/ Patient Compliance: *psychology/ Patient Education/ Psychiatric Status Rating Scales/ Psychotic Disorders: *drug therapy: psychology/ Risk Factors/ Schizophrenia: *drug therapy/ Schizophrenic Psychology/ Treatment Refusal: psychology

Abstract: Compliance behaviour is a multi-factorial phenomenon. In psychotic patients, it includes patient-related, medication-related, and environmental components. Compliance is a crucial factor in relation to outcome. The aim of this study was to explore indicators of compliance in a sample of 59 patients with a first-onset psychosis during their initial phase of treatment. Dependent variables in the logistic regression analysis included predictions made by the patients about their compliance in the initial phase and the observed compliance during the first 3 months according to patient record data. Explanatory variables comprised age, sex, living situation, education and social activities, Positive and Negative Syndrome Scale (PANSS) score, Hamilton Depression Scale score, Global Assessment of Functioning Scale score, Strauss-Carpenter Outcome Scale score, self-rated side effects, and insight and treatment-related variables. Predictions made by the patients about their compliance were determined by their self-rated attitude and insight measures. Determinants of observed non-compliance included experienced harmful side effects, male sex, lack of social activities, low score on PANSS positive symptoms, high PANSS total score and young age. The duration of untreated psychosis was not associated with compliance. Indicators of compliance in first-episode psychosis resemble those in the overall

psychotic population. During the acute phase of psychosis, insight and attitudes toward treatment are the sole determinants of the patients' prediction of compliance.

43. Kaplan, R. C.; Bhalodkar, N. C.; Brown, E. J. Jr; White, J., and Brown, D. L. Race, ethnicity, and sociocultural characteristics predict noncompliance with lipid-lowering medications. *Prev Med.* 2004 Dec; 39(6):1249-55.
Keywords: Adult/ Aged/ Aged, 80 and over/ Anticholesteremic Agents: administration & dosage: adverse effects: *therapeutic use/ Female/ Health Status/ Heptanoic Acids: administration & dosage: adverse effects: therapeutic use/ Humans/ Interviews/ Male/ Middle Aged/ Multivariate Analysis/ Patient Compliance: ethnology: *statistics & numerical data/ Pyrroles: administration & dosage: adverse effects: therapeutic use/ Questionnaires/ Research Support, Non-U.S. Gov't/ Simvastatin: administration & dosage: adverse effects: therapeutic use/ Socioeconomic Factors/ Time Factors/ Treatment Outcome/ Urban Population
Abstract: BACKGROUND: Sociocultural factors that predict noncompliance with lipid-lowering medications are not well understood. METHODS: Interviews and medical record review were conducted for 510 patients treated with lipid-lowering medications. Compliance with lipid-lowering medications was measured by patients' self-assessment of medication-taking practices. RESULTS: Adjusted for age and sex, there was a higher frequency of noncompliance among Black and Hispanic subjects. Adjusted for age, sex, and race/ethnicity, noncompliance was associated with medication side effects, feelings of sadness or depression, fair or poor health status, primary use of a language other than English, single or divorced status, fewer and less frequent contact with friends, children in the household, and lower education. Independent predictors of noncompliance in multivariate models were side effects (OR = 3.9, $P < 0.01$), sadness or depression (OR = 1.9, $P = 0.05$), Black (OR = 3.7, $P < 0.01$, vs. White), Hispanic (OR = 6.3, $P < 0.01$, vs. White), single or divorced (OR = 2.1, $P < 0.01$), children in the household (OR = 1.5 per child, $P < 0.01$), and lack of health insurance (OR = 2.4, $P = 0.05$). CONCLUSIONS: Unmarried status, feelings of sadness or depression, lack of insurance, and children in the household were independently associated with poorer compliance with lipid-lowering medications in this urban population. Nonetheless, higher noncompliance among minority patients persisted independently of these and other specific social, cultural, and economic factors.
44. Keller, M. B.; Hirschfeld, R. M.; Demyttenaere, K., and Baldwin, D. S. Optimizing outcomes in depression: focus on antidepressant compliance. *Int Clin Psychopharmacol.* 2002 Nov; 17(6):265-71.
Keywords: Antidepressive Agents: *adverse effects: *therapeutic use/ Depressive Disorder: *drug therapy: psychology/ Humans/ *Patient Compliance/ *Patient Education/ Physician-Patient Relations/ Research Support, Non-U.S. Gov't
Abstract: Major depressive disorder is a chronic and recurrent illness that is associated with significant morbidity and mortality. Patients frequently experience recurrent depressive episodes that are of longer duration and increased severity and which are less responsive to treatment than the index episode. Despite the highly prevalent nature of the illness, depression is frequently unrecognized and undertreated. Compliance with

antidepressant medication is essential to consolidate treatment response and prevent relapse and recurrence. However, compliance with antidepressant medication is poor. Education of the patient and physician regarding the nature of depression and its treatment is essential for improving patient compliance. Although psychological mechanisms are a major factor affecting patient compliance, speed of onset of action and poor tolerability of antidepressant medication also have a considerable influence on patient compliance. The newer antidepressants, such as selective serotonin reuptake inhibitors, nonselective serotonin-norepinephrine reuptake inhibitors, and the selective norepinephrine reuptake inhibitors, are better tolerated than tricyclic antidepressants, possibly resulting in improved compliance and treatment outcome.

45. Kemppainen, J. K.; Buffum, M.; Wike, G.; Kestner, M.; Zappe, C.; Hopkins, R.; Chambers, K. H.; Morrow, M., and Bartlebaugh, P. Psychiatric nursing & medication adherence. *J Psychosoc Nurs Ment Health Serv.* 2003 Feb; 41(2):38-49.
Keywords: Humans/ Mental Disorders: *drug therapy: epidemiology/ Nurse-Patient Relations/ *Patient Compliance: statistics & numerical data/ Psychiatric Nursing: *methods/ Psychotropic Drugs: *therapeutic use/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, Non-P.H.S.
Abstract: A survey was developed to determine whether the rapidly changing context of mental health care has significantly influenced how psychiatric nurses assess and intervene in issues related to medication adherence. A sample of 126 psychiatric nurses working in Veterans Affairs mental health treatment facilities in northern California, Hawaii, and Nevada identified the most effective methods for tracking medication adherence, as well as successful adherence interventions. Despite the challenge imposed by changing work environments, psychiatric nurses use creative and innovative approaches to improve their patients' medication adherence. Interventions for enhancing patient adherence with prescribed regimens are identified. Essential role dimensions related to medication adherence defined by the nurses in this survey included providing medication education, tracking patient adherence, assessing medication effectiveness, providing individualized, tailored adherence interventions, and collaborating with other health care providers in medication planning. Study findings support using nurses to their full potential and highlight nurses' need for more educational opportunities and consultation with experts (e.g., clinical pharmacists).
46. Kim, M. J.; Ahn, Y. H.; Chon, C.; Bowen, P., and Khan, S. Health disparities in lifestyle choices among hypertensive Korean Americans, non-Hispanic Whites, and Blacks. *Biol Res Nurs.* 2005 Jul; 7(1):67-74.
Keywords: Adult/ African Americans: *ethnology/ Aged/ Analysis of Variance/ Antihypertensive Agents: therapeutic use/ Asian Americans: *ethnology/ Chicago/ *Choice Behavior/ Comparative Study/ Diet, Reducing: psychology/ Diet, Sodium-Restricted: psychology/ European Continental Ancestry Group: *ethnology/ Exercise: psychology/ Female/ Health Behavior: ethnology/ Health Knowledge, Attitudes, Practice/ Health Promotion/ Health Services Needs and Demand/ Health Status/ Humans/ Hypertension: *ethnology: prevention & control/ Korea: ethnology/ Life Style: *ethnology/ Male/ Middle Aged/ Nutrition Surveys/ Patient Compliance: *ethnology/

Patient Education/ Questionnaires/ Risk Factors

Abstract: **PURPOSE AND METHODS:** To describe medication profile, diet, and exercise/physical activity in hypertensive Korean Americans, a convenience sample of 100 hypertensive Korean Americans (KAs) at two KA health clinics were interviewed by bilingual Korean nurses using questions from the 1988-1994 Third National Health and Nutrition Examination Survey (NHANES III). One hundred age- and gender-matched hypertensive non-Hispanic Whites and 100 Blacks were randomly selected from the NHANES III dataset, and results were compared to describe the health disparities in lifestyle choices among the three groups. **RESULTS:** The medication profile among the three groups was similar. A majority of members of all three groups had been told by health professionals to exercise for hypertension. KAs made significantly less effort to reduce salt in their diets than did members of the other two groups ($p < .05$). Fewer KAs than non-Hispanic Whites or Blacks were following their health professionals' advice to control or lose weight for their high blood cholesterol levels. KAs had the lowest body mass index and were older and more educated than members of the other two groups. KAs' primary reasons for using the KA clinic were the respect they received and the use of the Korean language. **IMPLICATIONS:** KA health professionals need to teach their patients more about the importance of health-promoting lifestyles for hypertension and its contributing factors. More KA hypertensive patients should follow the advice of health professionals on healthy lifestyles. Nurses should continue to treat patients with respect and provide care with sensitivity to language needs of patients.

47. Kim, Y. S.; Sunwoo, S.; Lee, H. R.; Lee, K. M.; Park, Y. W.; Shin, H. C.; Kim, C. H.; Kim, D. H.; Kim, B. S.; Cha, H. S., and Huh, B. Y. Determinants of non-compliance with lipid-lowering therapy in hyperlipidemic patients. *Pharmacoepidemiol Drug Saf.* 2002 Oct-2002 Nov 30; 11(7):593-600.

Keywords: Adult/ Age Factors/ Antilipemic Agents: *therapeutic use/ Female/ Humans/ Hyperlipidemia: *drug therapy/ Male/ Middle Aged/ Multivariate Analysis/ *Patient Compliance/ Patient Education/ Patient Satisfaction/ Product Surveillance, Postmarketing/ Prospective Studies/ Questionnaires/ Research Support, Non-U.S. Gov't/ Sex Factors/ Simvastatin: *therapeutic use/ Smoking

Notes: **CORPORATE NAME:** Korea Post-Marketing Surveillance Research Group. **Abstract:** **PURPOSE:** In order to assess the determinants of non-compliance with a lipid-lowering therapy, a prospective study of the hyperlipidemic Korean subjects was carried out. **METHODS:** A total of 1019 patients was observed by 46 family physicians for the period of 1 year from January 1999 to January 2000. To ascertain the compliance associated with a lipid lowering drug (Simvastatin), we regularly followed up the hyperlipidemic patients at intervals of 4, 12 and 24 weeks. The criterion for evaluating compliance is to measure clinic attendance. Using a structured questionnaire, patients and physicians were asked about risk factors for the compliance. **RESULTS:** During the first 24 weeks of treatment, the lipid-lowering medication was continued by 52.3% and discontinued by 19.7%. The remaining 28% dropped out. Patient-related factors for non-compliance were young age, current smoker, lack of low fat diet and exercise, new user, no concomitant medication, and occurrence of adverse reactions. Physician-related factors for non-compliance were

low patients' satisfaction with the physician, small number of hyperlipidemic patients per month and working in a relatively small hospital. **CONCLUSIONS:** Compliance with the lipid-lowering therapy was relatively low and several factors for non-compliance were detected.

48. Koo, J. How do you foster medication adherence for better acne vulgaris management? *Skinmed*. 2003 Jul-2003 Aug 31; 2(4):229-33.
Keywords: Acne Vulgaris: *drug therapy/ Dermatologic Agents: *therapeutic use/ Drug Administration Schedule/ Humans/ *Patient Compliance/ *Patient Education/ Physician-Patient Relations/ Practice Guidelines/ Research Support, Non-U.S. Gov't
Abstract: Suboptimal medication adherence is one of the major reasons for treatment failure among patients with acne vulgaris. Motivating patients to adhere to treatment, especially during the maintenance phase, remains a challenge. Although the literature on medication adherence in the acne vulgaris patient population is sparse, the available literature on patients with dermatologic and nondermatologic disorders suggests that a multifactorial approach, combining nonpharmacologic interventions and effective, well tolerated, and simplified drug regimens, appears to be associated with the greatest success. Furthermore, it is important to evaluate the patient for underlying affective disorders (e.g., depression) that can undermine adherence. The dermatologist can play a major role in enhancing patient adherence by prescribing adherence-enhancing therapeutic regimens and by forming a therapeutic alliance with patients.
49. Krol, N.; Muris, J. W.; Schattenberg, G.; Grol, R., and Wensing, M. Use of prescribed and non-prescribed medication for dyspepsia. *Scand J Prim Health Care*. 2004 Sep; 22(3):163-7.
Keywords: Adult/ Drug Utilization/ Dyspepsia: *drug therapy/ *Family Practice/ Female/ Health Care Surveys/ Humans/ Male/ Middle Aged/ Netherlands/ Patient Compliance: *statistics & numerical data/ Questionnaires/ Research Support, Non-U.S. Gov't/ Self Administration: *statistics & numerical data/ Self Medication: *statistics & numerical data
Abstract: **OBJECTIVE:** To explore patient factors related to the use of prescribed and non-prescribed drugs for dyspepsia in The Netherlands. **DESIGN:** Patient survey study. **SETTING AND SUBJECTS:** Questionnaires sent to patients who had a prescription for dyspepsia medication from their general practitioner. **MAIN OUTCOME MEASURES:** Patient factors related to the on-demand use of prescribed medication and the use of non-prescribed medication for dyspepsia. **RESULTS:** 74% of the (n=518) patients had been receiving prescribed medication for dyspepsia for more than one year. A quarter of the patients were using the prescribed medication "on demand" instead of adhering to the instructions on the prescription. PPI prescriptions reduced the probability of using the medication on demand, compared with other prescribed drugs (OR 0.39). Some 19% of the patients were using non-prescribed drugs for dyspepsia. More of the patients who had visited their general practitioner in the previous 12 months were using their drugs on demand (OR 2.27) and were using non-prescribed drugs (OR 2.40) than the patients who had not visited their GP. **CONCLUSION:** Clear information for patients on how to use their medication for dyspepsia may contribute to decreasing unnecessary drug use. Communication about (in)appropriate use of drugs "on

demand", non-prescribed drugs, and health education should be addressed to all patient groups. Further studies on these topics should aim to improve medical care based on shared decision-making for patients with dyspepsia.

50. Krousel-Wood, M.; Thomas, S.; Muntner, P., and Morisky, D. Medication adherence: a key factor in achieving blood pressure control and good clinical outcomes in hypertensive patients. *Curr Opin Cardiol*. 2004 Jul; 19(4):357-62.
Keywords: Antihypertensive Agents: adverse effects: *therapeutic use/ Blood Pressure: *drug effects/ Delivery of Health Care/ Depression: psychology/ Health Knowledge, Attitudes, Practice/ Humans/ Hypertension: *drug therapy: *psychology/ Internal-External Control/ Patient Compliance: *psychology/ Patient Education/ Quality of Life/ Treatment Outcome
Abstract: PURPOSE OF REVIEW: Patients' adherence to antihypertensive drug regimens is a complex but important factor in achieving blood pressure control and reducing adverse cardiovascular outcomes. Approximately one half of patients with hypertension adhere to prescribed medications, and fewer than one in three patients have controlled blood pressure. RECENT FINDINGS: Several recent studies have highlighted the importance of patient medication adherence and have outlined factors that affect patient compliance with prescribed therapy. SUMMARY: On the basis of published studies, a conceptual framework of factors that affect patient adherence is presented. Recognizing patient nonadherence to medical therapy as a factor leading to poor blood pressure control and adverse outcomes remains a key challenge for clinicians caring for patients with hypertension.
51. Kumarasamy, N.; Safren, S. A.; Raminani, S. R.; Pickard, R.; James, R.; Krishnan, A. K.; Solomon, S., and Mayer, K. H. Barriers and facilitators to antiretroviral medication adherence among patients with HIV in Chennai, India: a qualitative study. *AIDS Patient Care STDS*. 2005 Aug; 19(8):526-37.
Keywords: Adult/ Anti-HIV Agents: economics: *therapeutic use/ Drug Costs/ Female/ HIV Infections: *drug therapy: psychology/ *Health Knowledge, Attitudes, Practice/ Humans/ India: epidemiology/ Interviews/ Male/ Middle Aged/ Patient Compliance: *psychology/ Privacy/ Research Support, N.I.H., Extramural/ Research Support, U.S. Gov't, P.H.S./ Risk Factors/ Social Support
Abstract: Antiretroviral therapy (ART) for HIV is increasingly being introduced and utilized in diverse areas of the world. However, little research exists on adherence to ART in different cultural settings, particularly in developing countries such as India. This formative qualitative study examined barriers and facilitators of ART adherence among 60 (49 men, 11 women; 33 taking ART, 27 not currently taking ART) patients receiving HIV primary care at YRG CARE, a nongovernmental organization, in Chennai, India. The average participant reported becoming HIV infected through heterosexual transmission, was between 31 and 40 years old, had over ninth class standard education, was married, and generally had access to medical care; however, we obtained some qualitative data from various other risk categories. Trained ethnographers at the study site conducted in-depth interviews in the local language. These interviews were analyzed for content and ethnographic data. Almost all of the participants discussed the cost of ART as a barrier, with many reporting extended drug

holidays, turning to family and/or friends, or taking drastic measures (i.e., selling family jewels, property) for financial assistance. Other barriers centered on privacy and stigma issues, such as disclosure of HIV inhibiting pill-taking and social support. Frequently discussed facilitators of adherence included perceived benefits of ART and proper adherence, perceptions about the consequences of nonadherence, and social support, if available. These data highlight the importance of reducing the cost of antiretroviral medications, involving family members in HIV care, and addressing privacy issues and stigma in counseling interventions in this setting.

52. Lacro, J. P.; Dunn, L. B.; Dolder, C. R.; Leckband, S. G., and Jeste, D. V. Prevalence of and risk factors for medication nonadherence in patients with schizophrenia: a comprehensive review of recent literature. *J Clin Psychiatry*. 2002 Oct; 63(10):892-909. Keywords: Adult/ Ambulatory Care/ Antipsychotic Agents: adverse effects: *therapeutic use/ Comparative Study/ Factor Analysis, Statistical/ Female/ Hospitalization/ Humans/ Male/ Prevalence/ Probability/ Research Design: standards/ Research Support, U.S. Gov't, Non-P.H.S./ Research Support, U.S. Gov't, P.H.S./ Risk Factors/ Schizophrenia: *drug therapy/ Schizophrenic Psychology/ *Treatment Refusal: psychology: statistics & numerical data
- Abstract: OBJECTIVE: Nonadherence to prescribed antipsychotic medications places patients with schizophrenia at a greatly increased risk of illness exacerbation and rehospitalization. Identification of risk factors for nonadherence is an initial step toward designing effective interventions. This article reviews recent literature on the prevalence of and risk factors for medication nonadherence in patients with schizophrenia. DATA SOURCES: We searched the MEDLINE/HealthSTAR and PsycINFO databases using combinations of the keywords risk factor(s), adherence, compliance, antipsychotic, neuroleptic, schizophrenia, and psychosis for articles published since 1980 that identified risk factors for medication nonadherence in schizophrenia patients. We included reports that (1) were published in English and (2) specifically examined risk factors for medication nonadherence. Thirty-nine articles met our selection criteria. DATA SYNTHESIS: Among the 10 reports that met a strict set of study inclusion criteria, we found a mean rate of nonadherence of 41.2%; the 5 reports that met a stricter set of inclusion criteria had a mean nonadherence rate of 49.5%. In the 39 articles reviewed, factors most consistently associated with nonadherence included poor insight, negative attitude or subjective response toward medication, previous nonadherence, substance abuse, shorter illness duration, inadequate discharge planning or aftercare environment, and poorer therapeutic alliance. Findings regarding an association between adherence and medication type were inconclusive, although few studies explored this relationship. Other factors such as age, gender, ethnicity, marital status, education level, neurocognitive impairment, severity of psychotic symptoms, severity of medication side effects, higher antipsychotic dose, presence of mood symptoms, route of medication administration, and family involvement were not found to be consistent predictors of nonadherence. Limitations of the published literature are discussed. CONCLUSION: Efforts to improve medication adherence in patients with schizophrenia should target relevant risk factors.

53. Lai, Y. H.; Keefe, F. J.; Sun, W. Z.; Tsai, L. Y.; Cheng, P. L.; Chiou, J. F., and Wei, L. L. Relationship between pain-specific beliefs and adherence to analgesic regimens in Taiwanese cancer patients: a preliminary study. *J Pain Symptom Manage.* 2002 Oct; 24(4):415-23.
Keywords: Analgesics: *therapeutic use/ *Ethnic Groups/ *Health Knowledge, Attitudes, Practice/ Humans/ Pain: *drug therapy: *physiopathology/ *Patient Compliance/ Research Support, Non-U.S. Gov't/ Taiwan
Abstract: This pilot cross-sectional study aimed to 1) explore pain beliefs and adherence to prescribed analgesics in Taiwanese cancer patients, and 2) examine how selected pain beliefs, pain sensory characteristics, and demographic factors predict analgesic adherence. Pain beliefs were measured by the Chinese version of Pain and Opioid Analgesic Beliefs Scale-Cancer (POABS-CA) and the Survey of Pain Attitudes (SOPA). Analgesic adherence was measured by patient self-report of all prescribed pain medicine taken during the previous 7 days. Only 66.5% of hospitalized cancer patients with pain (n = 194) adhered to their analgesic regimen. Overall, patients had relatively high mean scores in beliefs about disability, medications, negative effects, and pain endurance, and low scores in control and emotion beliefs. Medication and control beliefs significantly predicted analgesic adherence. Patients with higher medication beliefs and lower control beliefs were more likely to be adherent. Findings support the importance of selected pain beliefs in patients' adherence to analgesics, suggesting that pain beliefs be assessed and integrated into pain management and patient education to enhance adherence.
54. Leopold, N. A.; Polansky, M., and Hurka, M. R. Drug adherence in Parkinson's disease. *Mov Disord.* 2004 May; 19(5):513-7.
Keywords: Aged/ Antiparkinson Agents: *administration & dosage: therapeutic use/ Carbidopa: *administration & dosage: therapeutic use/ Chronic Disease/ Drug Administration Schedule/ Drug Combinations/ Drug Monitoring: *methods/ Female/ Humans/ Levodopa: *administration & dosage: therapeutic use/ Male/ Medication Systems/ Parkinson Disease: *drug therapy/ Patient Compliance: *statistics & numerical data/ Questionnaires
Abstract: Physicians modify drug schedules in response to their patients' clinical responses. Failure to relieve patients' symptoms or the emergence of drug-related side effects may reflect nonadherence to a prescribed drug schedule rather than incorrect therapeutic physician decisions. Using a medication questionnaire and a computerized medication event monitoring system (MEMS) to monitor medication use, nonadherence of drug use was examined in subjects with Parkinson's disease (PD). We report that prescription nonadherence in PD subjects was common and approximated that reported in other chronic diseases. During a 28-day observation period, only 4 of 39 subjects had complete schedule adherence, i.e., no missed, extra, or mistimed doses. Using a questionnaire, 24.3% of subjects acknowledged missing any doses but the computerized MEMS recorded that 51.3% of subjects missed at least one dose per week and 20.5% of subjects missed three or more doses per week. Mistiming of doses was admitted by 73% of subjects but 82.1% had recorded mistimed doses. Of multiple sociodemographic and disease-related items examined, only gender and level of education were statistically related to nonadherence.

55. Loghman-Adham, M. Medication noncompliance in patients with chronic disease: issues in dialysis and renal transplantation. *Am J Manag Care*. 2003 Feb; 9(2):155-71. Keywords: Drug Costs/ Drug Monitoring: methods/ Health Behavior/ Humans/ Immunosuppressive Agents: therapeutic use/ Kidney Failure, Chronic: *psychology: therapy/ Kidney Transplantation: immunology: *psychology/ *Patient Compliance: psychology: statistics & numerical data/ Patient Education/ Physician-Patient Relations/ Questionnaires/ Renal Dialysis: psychology: *utilization/ Self Administration: *utilization/ Social Support/ *Treatment Refusal: psychology: statistics & numerical data
Abstract: For many chronic conditions, poor patient compliance with prescribed medications and other aspects of medical treatment can adversely affect the treatment outcome. Compliance with long-term treatment for chronic asymptomatic conditions such as hypertension is on the order of 50%. Although drugs with a longer therapeutic half-life may ease the burden of repeated daily dosing, the efficacy of any self-administered medication depends to a large extent on patient compliance. This article addresses the compliance issues in patients undergoing renal replacement therapy and in those with a successful renal transplant. A focused discussion of compliance in dialysis and renal transplant patients is followed by a general review of the literature on patient compliance. Many factors associated with poor compliance in this patient population are identified via a review of the recent literature. The difficulties in monitoring medication compliance and the methods used are discussed. Among factors associated with poor compliance, the following have been identified in several studies: frequent dosing, patient's perception of treatment benefits, poor patient-physician communication, lack of motivation, poor socioeconomic background, lack of family and social support, and younger age. Many strategies have been suggested to improve medication compliance, most without scientific validation. Strategies to improve compliance in dialysis and transplant patients are similar to those described for other chronic conditions and include simplifying the treatment regimen, establishing a partnership with the patient, and increasing awareness through education and feedback.
56. Lowry, K. P.; Dudley, T. K.; Oddone, E. Z., and Bosworth, H. B. Intentional and unintentional nonadherence to antihypertensive medication. *Ann Pharmacother*. 2005 Jul-2005 Aug 31; 39(7-8):1198-203. Keywords: Aged/ Antihypertensive Agents: adverse effects: *therapeutic use/ Data Interpretation, Statistical/ Diabetes Complications: physiopathology/ Education/ Ethnic Groups/ Female/ Humans/ Hypertension: drug therapy: physiopathology/ Male/ Middle Aged/ Multivariate Analysis/ *Patient Compliance/ Research Support, U.S. Gov't, Non-P.H.S./ Socioeconomic Factors/ Treatment Outcome
Abstract: BACKGROUND: Hypertension is poorly controlled in the US due to medication nonadherence. Recent evidence suggests that nonadherence can be classified as intentional or unintentional and different patient characteristics, such as the experience of adverse effects, may be associated with each. OBJECTIVE: To examine associations between patient characteristics, including reported adverse effects, and both intentional and unintentional nonadherence among 588 hypertensive patients. METHODS: Baseline data from a clinical trial, the Veterans' Study To Improve the Control of Hypertension, were examined. Intentional and unintentional

nonadherence were assessed using a self-report measure. Participants were presented with a list of adverse effects commonly associated with antihypertensive medication and asked to indicate which symptoms they had experienced. Logistic regression analyses were used to examine adjusted associations between patient characteristics and type of nonadherence. RESULTS: Approximately 31% of patients reported unintentional nonadherence and 9% reported intentional nonadherence. Non-white participants, individuals without diabetes mellitus, and individuals reporting ≥ 5 adverse effects were more likely to report intentional nonadherence than their counterparts. Individuals with less than a 10th-grade education and non-white participants were more likely to report unintentional nonadherence than their counterparts. When symptoms of increased urination and wheezing/shortness of breath were reported, patients were more likely to report intentional and unintentional nonadherence compared with those who were adherent. Unintentional nonadherence was also associated with reports of dizziness and rapid pulse. CONCLUSIONS: Both intentional and unintentional nonadherence are common and related to perceived adverse effects. Furthermore, different interventions may be necessary to improve adherence in unintentionally and intentionally nonadherent patients.

57. Maddigan, S. L.; Farris, K. B.; Keating, N.; Wiens, C. A., and Johnson, J. A. Predictors of older adults' capacity for medication management in a self-medication program: a retrospective chart review. *J Aging Health*. 2003 May; 15(2):332-52.
Keywords: Activities of Daily Living/ Aged/ Alberta/ *Cognition/ *Health Services for the Aged/ *Health Status Indicators/ Humans/ Medication Errors: prevention & control: *statistics & numerical data/ Patient Compliance/ Patient Education/ Risk Factors/ *Self Administration
Abstract: The aim of this project was to identify variables that predicted older adults' ability to manage medications. METHODS. The study used a retrospective cohort design and was set in a self-medication program within a rehabilitation hospital. A random sample of charts from 301 participants in the self-medication program was reviewed. RESULTS. Logistic regression models accounted for 26.7% and 55.8% of the variance in the probability of making one or more self-medication errors during the initial and final weeks of the program, respectively. The importance of cognition in predicting medication management capacity was seen in bivariate and multivariate analyses and through a number of interactions with other predictors. Statistically significant predictors in one or both analyses included medication regimen complexity, Mini-Mental State Exam (MMSE) score, duration of institutionalization, depression, and interactions between (a) medication regimen complexity and MMSE score and (b) ability to cook and MMSE score. DISCUSSION. The direct effects of cognition and medication regimen complexity were important predictors of medication management capacity.
58. Maidment, R.; Livingston, G., and Katona, C. Just keep taking the tablets: adherence to antidepressant treatment in older people in primary care. *Int J Geriatr Psychiatry*. 2002 Aug; 17(8):752-7.
Keywords: Aged/ Aged, 80 and over/ Antidepressive Agents: administration & dosage: *therapeutic use/ Cognition Disorders: diagnosis: epidemiology: etiology/ Depressive

Disorder: *drug therapy: psychology/ Female/ Humans/ Male/ Neuropsychological Tests/ Patient Compliance: *statistics & numerical data/ Prevalence/ Questionnaires/ Research Support, Non-U.S. Gov't/ Rural Population

Abstract: BACKGROUND: poor adherence to antidepressant medication may account for a significant proportion of treatment failures. Adherence levels and factors associated with adherence have not previously been studied in older people. OBJECTIVES: to report the prevalence and correlates of adherence to antidepressants in people > or = 65 years of age in a primary care setting. METHOD: sixty-seven patients currently being prescribed antidepressants from a single rural general practice were assessed using a range of questionnaires measuring adherence to antidepressants, severity of depression, specific health education about antidepressants, level of side-effects, insight, positive and negative beliefs about medication in general and antidepressants in particular, level of intellectual functioning (past and present), a past history of recovery from depression, type of antidepressant, complexity of prescriptions, age and living arrangements. RESULTS: forty-five participants (67.2%) were fully adherent; seven (10.4%) mostly adherent, three (4.5%) adhered sometimes, three rarely and nine (13.4%) never. Backwards linear regression found that adherence increased with information given and cognitive impairment and decreased with concerns about taking antidepressants and severity of side-effects. CONCLUSIONS: non-adherence to antidepressant medication is a significant problem in older patients. Our study probably overestimated adherence as it was self-report, which usually overestimates adherence and the refusals are more likely to have been people not taking tablets but still found nearly one third of the patients were non-adherent. An intervention comprising education, eliciting and addressing specific concerns about antidepressant medication and using medication, which minimises side effects, may be helpful.

59. Marder, S. R. Overview of partial compliance. *J Clin Psychiatry*. 2003; 64 Suppl 16:3-9. Keywords: Antipsychotic Agents: *administration & dosage: adverse effects/ Delayed-Action Preparations/ Humans/ Patient Education/ Recurrence: prevention & control/ Schizophrenia: *drug therapy/ *Schizophrenic Psychology/ Treatment Refusal: *psychology
- Abstract: A substantial proportion of patients with psychiatric and nonpsychiatric chronic illnesses fail to take their medications as prescribed. A number of studies suggest that 50% or more of individuals with schizophrenia are noncompliant with medications at some time during their illness. In most cases, patients are partially compliant, taking only a portion of their prescribed medications. Noncompliance is probably the most important element contributing to relapse in schizophrenia. Factors contributing to the rate of noncompliance include medication side effects, the severity of psychotic symptoms, impaired cognition, and an inadequate understanding of the role of medication for preventing relapse. In addition, both patients and clinicians overestimate patients' compliance. Strategies for managing partial compliance include the treatment of medication side effects, the education of patients about their illness, and the use of long-acting antipsychotic formulations.

60. Masand, P. S. Tolerability and adherence issues in antidepressant therapy. *Clin Ther.* 2003 Aug; 25(8):2289-304.
Keywords: Antidepressive Agents: administration & dosage: adverse effects: *therapeutic use/ Clinical Trials/ Depressive Disorder: *drug therapy/ Dose-Response Relationship, Drug/ Drug Therapy, Combination/ Humans/ Patient Compliance/ Physician's Practice Patterns/ Research Support, Non-U.S. Gov't
Abstract: BACKGROUND: Despite the availability of effective antidepressants, recurrence and relapse rates for depression are high (up to 80%), treatment failures are common (40% to 60%), and as many as 20% of patients remain inadequately treated. Depression treatment guidelines are often not followed, and rates of nonadherence to treatment are high, with 28% of patients discontinuing antidepressant treatment within the first month and 44% discontinuing within 3 months of initiating therapy. OBJECTIVE: The aim of this article was to summarize research on antidepressant therapy nonadherence and examine the limitations of strategies used to minimize adverse events (AEs) and improve treatment duration. METHODS: A thorough search of the published literature from 1990 to the present was performed on MEDLINE and other search engines. The following search terms were used: tolerability, antidepressants, patient compliance, adherence, therapy, SSRIs, tricyclics, and other related terms focusing on specific agents. RESULTS: Physician-specific issues represent some of the most important obstacles to adequate antidepressant therapy. Inadequate patient education, prescription of inappropriate medications or inadequate dosages, and lack of follow-up care are all issues the physician can control to improve patient adherence. Patient-specific issues include poor motivation (due to symptoms of depression) to continue therapy, failure to perceive a benefit, and concerns about cost of therapy. Medication-specific issues such as treatment-related AEs, delayed onset of action, complicated dosing or titration schedule, and subtherapeutic dosing also contribute to treatment discontinuation. Therapy with ≥ 1 antidepressant and/or atypical antipsychotic may improve symptom control, but little evidence exists regarding efficacy and safety. Dosage reduction has been attempted to reduce events that may lead to patient discontinuation, but this may increase the risk of recurrent depressive episodes. CONCLUSIONS: To maximize patient adherence to antidepressant therapy, it is necessary to combine adequate treatment duration, realistic patient expectations, and the right dose of an agent capable of treating the full range of symptoms while controlling for AEs.
61. Mayer, O. Jr; Simon, J.; Heidrich, J.; Cokkinos, D. V., and De Bacquer, D. Educational level and risk profile of cardiac patients in the EUROASPIRE II substudy. *J Epidemiol Community Health.* 2004 Jan; 58(1):47-52.
Keywords: Adult/ Aged/ Antilipemic Agents: administration & dosage/ Blood Glucose: analysis/ Blood Pressure/ Body Mass Index/ Cardiovascular Agents: administration & dosage/ Coronary Disease: blood: psychology: *therapy/ Cross-Sectional Studies/ Drug Utilization/ Educational Status/ Europe/ Female/ *Health Behavior/ Health Surveys/ Humans/ Lipoproteins, HDL Cholesterol: blood/ Male/ Middle Aged/ Odds Ratio/ Patient Compliance: *statistics & numerical data/ Risk Factors/ Sex Factors
Notes: CORPORATE NAME: EUROASPIRE II Study Group.
Abstract: STUDY OBJECTIVE: To ascertain, whether, conventional risk factors and

readiness of coronary patients to modify their behaviour and to comply with recommended medication were associated with education in patients with established coronary heart disease. Design and methods: EUROASPIRE II was a cross sectional survey undertaken in 1999-2000 in 15 European countries to ascertain how effectively recommendations on coronary preventions are being followed in clinical practice. Consecutive patients, men and women ≤ 71 years who had been hospitalised for acute coronary syndrome or revascularisation procedures, were identified retrospectively. Data were collected through a review of medical records, interview, and examination at least six months after hospitalisation. The education reached was ascertained at the interview. Main results: A total of 5556 patients (1319 women) were evaluated. Significantly more patients with ischaemia had only primary education, in contrast with the remaining diagnostic groups. Body mass index and glucose were negatively associated with educational level, while HDL-cholesterol was positively associated. Men with highest education had significantly lower systolic blood pressure and total cholesterol. The prevalence of current smoking decreased significantly from primary to secondary and high education only in men. Both men and women with primary educational level were more often treated with antidiabetics, and antihypertensives, but less often with lipid lowering drugs. The effectiveness of treatment was virtually the same in all education groups. CONCLUSIONS: Patients with higher education had lower global coronary risk, than those with lower education. This should be considered in clinical practice. Particular strategies for risk communication and counselling are needed for those with lower education status.

62. Maywald, U.; Schindler, C.; Bux, Y., and Kirch, W. [Drug information for patients -- unmet needs, evaluation and influence on the compliance]. *Dtsch Med Wochenschr.* 2005 Jun 17; 130(24):1485-90.
Keywords: Adverse Drug Reaction Reporting Systems: utilization/ Aged/ Drug Information Services: *utilization/ English Abstract/ Female/ Follow-Up Studies/ Germany/ Health Services Needs and Demand: *statistics & numerical data/ Humans/ Male/ Middle Aged/ Patient Compliance: *statistics & numerical data/ Patient Education: *statistics & numerical data/ Physician-Patient Relations/ Questionnaires/ Treatment Outcome
Abstract: BACKGROUND: Many German patients are only insufficiently informed on their own drug therapy. Therefore, they have unmet drug information needs. We report the three-year experiences with the first drug information service for patients in Germany. We evaluate the impact of the advice on outcomes, patient sovereignty and Compliance. METHODS: All inquiries to the project within 36 months were analysed. Every patient calling within the first 24 months got a questionnaire for evaluation after the advice. The data were documented and analysed using a relational database. RESULTS: We registered 3316 inquiries. 66.2 % of the callers were female and 33,8 % male. The majority (64.5 %) was older than 65 years. The questions were mainly related to adverse drug reactions and interactions (26.6 %) as well as to information on efficacy of specific therapies (27.2 %). In 81,0 % of the patients, uncertainties regarding their medication were reduced by the advice. 37,9 % of the callers discussed the advice with their physician and 18,3 % reported a decreased consultation frequency after the advice. The patient-physician-relationship was mainly unaffected after using

the service. A better compliance was reported by more than the half of the callers affected by non-compliance at the time of the advice. CONCLUSIONS: The drug information service for patients is effective in providing medical expert information to the patients regarding their own medication. Additionally, the interaction competence of the patients was strengthened. We observed a general drug information deficit. A qualified advice may reduce medical problems caused by information deficits and reduce the use of ambulatory care. At the individual patient, the trust in its pharmacotherapy was strengthened and the compliance improved.

63. McKinley, B. T.; Mulhall, B. P., and Jackson, J. L. Perceived versus actual medication regimens among internal medicine patients. *Mil Med.* 2004 Jun; 169(6):451-4.
Keywords: Adult/ Aged/ Aged, 80 and over/ Clinical Competence/ Drug Administration Schedule/ Female/ Health Care Surveys/ Hospitals, Military/ Humans/ *Internal Medicine/ Interviews/ Male/ *Mental Recall/ Middle Aged/ Patient Compliance: *statistics & numerical data/ *Prescriptions, Drug/ Questionnaires/ Washington
Abstract: Exchange of accurate information between patients and medical providers is imperative for appropriate medication prescribing. We performed an evaluation of medication regimens of patients with information obtained independently from patient-completed surveys and nursing and provider interviews. The actual medication regimen was determined after the clinic encounter via mail-in forms or telephone interviews with patients reporting current medications directly from prescription bottles. Two hundred thirteen patients taking an average of 3.8 prescription medications were enrolled. Patients, nurses, and primary care providers were modestly accurate in reporting the number of medications being taken (κ , 0.57, 0.51, and 0.58, respectively); however, they performed poorly in reporting complete medication regimens as defined by the correct names, doses, and frequencies with 100% accuracy (34%, 26.7%, and 29.3%, respectively). Patients who created their own lists were more accurate than those who relied on memory, lists provided by providers, or discharge summaries. These findings indicate a significant difference between intended versus actual medication regimens at home.
64. Merz, C. N.; Buse, J. B.; Tuncer, D., and Twillman, G. B. Physician attitudes and practices and patient awareness of the cardiovascular complications of diabetes. *J Am Coll Cardiol.* 2002 Nov 20; 40(10):1877-81.
Keywords: Aged/ *Attitude/ Awareness: physiology/ Blood Pressure: physiology/ Cardiovascular Diseases: *complications: epidemiology: therapy/ Cholesterol: blood/ Comparative Study/ Data Collection/ *Diabetes Complications/ Diabetes Mellitus: epidemiology: therapy/ Diabetic Angiopathies: *psychology/ Humans/ Middle Aged/ Patient Education/ Physician-Patient Relations/ *Physicians/ Randomized Controlled Trials/ Research Support, Non-U.S. Gov't/ Risk Factors/ United States: epidemiology
Abstract: OBJECTIVES: Studies were conducted to: 1) assess physicians' attitudes and practices in managing cardiovascular disease (CVD) risks in diabetes; and 2) determine the awareness of CVD risks among diabetic patients. BACKGROUND: Cardiovascular disease is the leading cause of premature death among diabetic patients. As diabetes is often seen as a "glucose-centric" disease, it is unclear whether diabetic patients are talking with their doctors about CVD and other key clinical

parameters of diabetes care such as blood pressure and cholesterol. **METHODS:** An online survey was completed by a nationally representative sample of 900 physicians. The 95% confidence interval is approximately +/-2.5%. Before this study, a telephone survey of 2,008 people with diabetes was conducted using random, direct-dial screenings of U.S. households. **RESULTS:** Ninety-one percent of physicians believe that their patients with diabetes are "very" or "extremely" likely to have a cardiovascular event. Although physicians report discussing CVD risk factors with 88% of their diabetic patients, they perceive their diabetic patients as being only moderately knowledgeable about their increased CVD risks. Sixty-eight percent of the people with diabetes do not consider CVD to be a serious complication of diabetes; they are more likely to be aware of complications such as blindness (65%) or amputation (36%) rather than heart disease (17%), heart attack (14%), or stroke (5%). Physicians perceive "poor compliance" with behavioral modifications and medication regimens as the greatest barriers to the management of CVD risks in diabetic patients. **CONCLUSION:** Materials should be made available to help facilitate communication about CVD risks, and strategies for improving compliance with life-style modifications and multiple drug therapies should be explored. Efforts should continue to promote a comprehensive approach to the management of diabetes to include aggressive control of blood glucose and other CVD risk factors.

65. Mohammed, H.; Kieltyka, L.; Richardson-Alston, G.; Magnus, M.; Fawal, H.; Vermund, S. H.; Rice, J., and Kissinger, P. Adherence to HAART among HIV-infected persons in rural Louisiana. *AIDS Patient Care STDS*. 2004 May; 18(5):289-96.
Keywords: Adult/ African Americans: education: psychology/ Aged/ *Antiretroviral Therapy, Highly Active: adverse effects: psychology/ Depressive Disorder: complications: diagnosis: psychology/ Educational Status/ Employment/ Health Behavior/ Health Knowledge, Attitudes, Practice/ Humans/ Income/ Logistic Models/ Louisiana/ Marital Status/ Middle Aged/ Motivation/ Multivariate Analysis/ *Patient Compliance: psychology: statistics & numerical data/ Questionnaires/ Research Support, U.S. Gov't, P.H.S./ Risk Factors/ *Rural Health: statistics & numerical data/ Severity of Illness Index/ Substance-Related Disorders: complications: psychology
Abstract: The purpose of this study was to examine factors associated with nonadherence to highly active antiretroviral therapy (HAART) in patients seen in HIV clinics throughout nonurban Louisiana. A convenience sample of 273 patients from 8 areas in nonurban Louisiana were interviewed to obtain demographic, clinical and adherence information. Associations between demographic, clinical, and behavioral factors and nonadherence were examined. Ideally, non-adherence should not exceed 5% in patients for whom HAART was prescribed. Mean age was 38.6 years (range, 19-66), 29.3% were female, 60.1% were African American, 34.4% reported nonadherence to their HAART medication (defined as the subject's self-report of missing any doses of HAART medication in the prior week). In the prior month, participants reported the following behaviors: binge drinking (12.8%), problem drinking (12.8%), and illicit drug use (16.5%). Depression was found in 49.8% of the respondents. In logistic regression analysis, problem drinking odds ratio [OR] (95% confidence interval [CI]): 3.92 (1.69,9.09) was found to be associated with nonadherence. Demographic and behavioral factors such as illicit drug use and depression were not associated with

nonadherence on multivariable analysis. Problem drinking was associated with lack of adherence to HAART over the past week. Interventions to treat problem drinking are needed and may improve adherence to medication for HIV-infected persons living in rural, town, and small-city areas.

66. Monreal, M. T.; da Cunha, R. V., and Trinca, L. A. Compliance to antiretroviral medication as reported by AIDS patients assisted at the University Hospital of the Federal University of Mato Grosso do Sul. *Braz J Infect Dis.* 2002 Feb; 6(1):8-14.
Keywords: Acquired Immunodeficiency Syndrome: *drug therapy/ Adult/ Anti-HIV Agents: *therapeutic use/ Brazil/ Education/ Female/ Hospitals, University/ Humans/ Interviews/ Male/ Middle Aged/ *Patient Compliance/ Patients: psychology/ Sex Factors/ Treatment Refusal
Abstract: Compliance to antiretroviral medication is a problem for AIDS patients. Compliance can be influenced by the characteristics of the therapeutic program, by the health guidance professionals, by the patient, and by society in general. A group of 139 Brazilian AIDS patients from the Infectious-Parasitic Diseases day clinic at the University Hospital of the Federal University of Mato Grosso do Sul were interviewed from September 27, 1999 to January 21, 2000. We identified and evaluated the frequency of noncompliance to antiretroviral medication, as well as the associated motives. Those who ingested 80%, or more, of prescribed dosages during the week previous to the interview were considered compliant. Among the patients interviewed, 70% mentioned loss or misplacement of medicine, and 63% were considered compliant. Average compliance was 75.8%, with no difference between the sexes. The reasons given for non-compliance were: absent-mindedness or forgetfulness (67.7%), lack of medicine (41.9%), side effects (21.5%), complexity of prescribed regimens (12.9%), fatigue (9.7%), and voluntary interruption (7.5%). The non-compliance observed among these patients indicates that health service personnel should promote activities to recuperate these therapeutic programs, employing methodologies appropriate to the characteristics of this population.
67. Newmann, J. M. and Litchfield, W. E. Adequacy of dialysis: the patient's role and patient concerns. *Semin Nephrol.* 2005 Mar; 25(2):112-9.
Keywords: Attitude to Health/ *Health Behavior/ Humans/ Outcome Assessment (Health Care)/ *Patient Acceptance of Health Care/ *Renal Dialysis/ Treatment Outcome
Abstract: The patient's role in adequacy of hemodialysis is demanding and complex. It requires meticulous attention to initiating, accepting, and maintaining extraordinary behavioral change. This includes the following: (1) major alteration of dietary habits, often contrary to a patient's familial and cultural customs; (2) compliance with a new, voluminous medication routine, often straining personal finances; (3) reallocation of time for transportation, treatment, and partial recovery, frequently consuming a minimum of 6 to 8 hours 3 days each week; (4) psychologic adjustment to unaccustomed chronic dependency on, and accountability to, an array of variably experienced and competent renal care staff; (5) skills, seldom taught, required to communicate clearly and regularly with overworked medical professionals who are often much younger with less life experience; and (6) additional commitment to compensating for the physical fatigue that routinely accompanies hemodialysis.

Reasonable behavioral modification in these 6 categories is likely to increase the chances of a patient fulfilling his role in adequacy of dialysis. Some patients, however committed the staff have been in assisting them, may show little interest in dialysis adequacy and the patient's role. Other patients periodically may fail in their role unless the renal care team recognizes the patient as an individual who is included as an important team member. The patient requires consistent and repeated education about their disease, treatment, and risks and benefits of adherence. The unique, unnatural requirements of adequate chronic hemodialysis require this patient support from the renal staff, enhanced by continuous sensitive attention, empathy, and persuasion. This will help the patient achieve success in their role.

68. Njah, M.; Ben Abdelaziz, A.; Naceur, C.; Yazid, B.; Noura, A., and Ajmi, T. [Attitudes and practices in the Sahelian Tunisian population regarding drug usage]. *Tunis Med.* 2002 May; 80(5):249-54.
Keywords: Adult/ Drug Therapy: psychology: *statistics & numerical data/ Educational Status/ English Abstract/ Female/ Health Care Surveys/ *Health Knowledge, Attitudes, Practice/ Humans/ Male/ Parents: education: psychology/ Patient Compliance: psychology: statistics & numerical data/ Questionnaires/ Residence Characteristics: statistics & numerical data/ Self Administration: psychology: *statistics & numerical data/ Self Medication: psychology: *statistics & numerical data/ Tunisia
Abstract: Drugs occupies a strategic place in health care expenses. However, irrational practices characterize its utilization by all actors and particularly the population. The objective of this populational study is to identify attitudes and practices of the households of the sanitary region of Sousse (Tunisia) in the domain of medicine use. It is a descriptive survey concerning a representative sample of 402 households distributed in four localities (two urban, one semi-urban and one rural). Data have been collected through a questionnaire managed during an interview with the family's member (most often the chief of the household). We found that beliefs of the population are often erroneous (the expensive medicines are considered more efficient by 52% of interrogated persons and practices were often maladjusted (Self medication, insufficient compliance). A community mobilization via an education of health oriented by results of this exploratory survey would be an important component of the global strategy of promotion of the rational use of drugs in our country.
69. Olthoff, C. M.; Schouten, J. S.; van de Borne, B. W., and Webers, C. A. Noncompliance with ocular hypotensive treatment in patients with glaucoma or ocular hypertension an evidence-based review. *Ophthalmology.* 2005 Jun; 112(6):953-61.
Keywords: Antihypertensive Agents: *therapeutic use/ Delivery of Health Care/ Disease Progression/ Drug Utilization: *statistics & numerical data/ Evidence-Based Medicine/ Glaucoma: *drug therapy: physiopathology/ Humans/ Intraocular Pressure: *drug effects/ Ocular Hypertension: drug therapy: physiopathology/ Patient Compliance/ Prevalence/ Treatment Refusal: *statistics & numerical data/ Vision Disorders: drug therapy: physiopathology/ Visual Fields: drug effects
Abstract: OBJECTIVE: To summarize the available scientific evidence to support clinical decisions on how to deal with noncompliance in glaucoma patients. CLINICAL RELEVANCE: Insufficient reduction of intraocular pressure and progression of visual

field (VF) loss in glaucoma patients due to noncompliance with topical treatment may result in unnecessary therapy, with additional risks and costs. METHODS/LITERATURE REVIEWED: We conducted a literature search in the databases MEDLINE, EMBASE, CINAHL, PsychInfo, and Cochrane and reference lists. Thirty-four articles describing 29 original quantitative studies, in English, German, French, or Dutch, were included. Studies on noncompliance in drug trials were excluded. Two investigators independently selected the articles and abstracted their content, before negotiating their inclusion or exclusion. RESULTS: The proportions of patients who deviate from their prescribed medication regimen ranged from 5% to 80%. The impact of noncompliance on clinical outcome has not yet been established. There are no determinants sensitive and specific enough to identify potential noncompliers accurately. Patient knowledge and dose frequency can be used as starting points to improve compliance. A combination of patient education and prevention of forgetting doses seems to be successful in enhancing patient compliance. CONCLUSION: Noncompliance with hypotensive treatment is common among glaucoma patients. However, there is no strong evidence supporting a relation between noncompliance and progression of VF loss. Only a few guidelines for clinicians can be derived from the currently available literature. Future research should be guided by clinically relevant questions.

70. Pampallona, S.; Bollini, P.; Tibaldi, G.; Kupelnick, B., and Munizza, C. Patient adherence in the treatment of depression. *Br J Psychiatry*. 2002 Feb; 180:104-9. Keywords: Antidepressive Agents: *administration & dosage/ Depressive Disorder: *drug therapy: psychology/ Humans/ Patient Compliance: *statistics & numerical data/ Randomized Controlled Trials/ Research Support, Non-U.S. Gov't Abstract: BACKGROUND: Non-adherence with antidepressant treatment is very common. Increasing adherence to pharmacological treatment may affect response rate. AIMS: To review and summarise quantitative evidence on factors associated with adherence and of adherence-enhancing interventions. METHOD: A systematic review of computerised databases was carried out to identify quantitative studies of adherence in depression. Papers retained addressed unipolar depression and considered adherence as the primary end-point. RESULTS: Of studies published between 1973 and 1999, 32 met the review criteria: epidemiological descriptive studies (n=14): non-random comparisons of control and intervention groups (n=3); randomised interventions (n=14); and meta-analysis (n=1). Patient education and medication clinics were the interventions most commonly tested, combined with a variety of other interventions. CONCLUSIONS: The studies did not give consistent indications of which interventions may be effective. Carefully designed clinical trials are needed to clarify the effect of single and combined interventions.
71. Park, H.; Hong, Y.; Lee, H.; Ha, E., and Sung, Y. Individuals with type 2 diabetes and depressive symptoms exhibited lower adherence with self-care. *J Clin Epidemiol*. 2004 Sep; 57(9):978-84. Keywords: Adult/ Aged/ Blood Glucose Self-Monitoring: psychology/ Depression: etiology: *psychology/ Diabetes Mellitus, Type 2: *psychology: therapy/ Exercise: psychology/ Female/ Humans/ Hypoglycemic Agents: administration & dosage/ Male/

Middle Aged/ Patient Compliance: *psychology/ Patient Education/ Psychiatric Status Rating Scales/ Research Support, Non-U.S. Gov't/ Risk Factors/ Self Care:

*psychology

Abstract: OBJECTIVE: Our study aimed to determine whether depressive symptoms are associated with poor self-care behaviors among patients with type 2 diabetes. METHODS: Study subjects were 168 patients with diabetes, aged >30 years, who had a diabetes history of 1-15 years. Using a self-reported questionnaire, we evaluated diabetes self-care behaviors and depressive symptoms. Self-care behaviors were evaluated in five categories: medication taking, self-monitoring of blood glucose (SMBG), diet, exercise, and participation in patient education programs. Depressive symptoms were evaluated using the Centers for Epidemiologic Studies-Depression (CES-D) scales. Multiple logistic regression analyses were used to determine the association between self-care behaviors and depressive symptoms. RESULTS: Higher depressive-symptom scores were associated with poor self-care behaviors, significantly with poor participation in education programs (odds ratio OR=1.21, 95% confidence interval CI=1.06-1.38) and poor diet (OR=1.11, 95% CI=1.01-1.22), and marginally with poor medication taking (OR=1.14, 95% CI=1.00-1.31). Depressive symptoms were not significantly associated with either SMBG or exercise. CONCLUSIONS: These data suggest that the evaluation and control of depressive symptoms among diabetic patients would improve their adherence to self-care behaviors.

72. Park-Wyllie, L. Y. and Phillips, E. J. Challenges of adherence management in human immunodeficiency virus pharmacotherapy. *Can J Clin Pharmacol.* 2003 Winter; 10(4):189-95.

Keywords: Antiretroviral Therapy, Highly Active: adverse effects: psychology:

*utilization/ Drug Administration Schedule/ Drug Resistance, Viral/ HIV Infections: *drug therapy: psychology/ Humans/ *Patient Compliance/ Patient Education/ Socioeconomic Factors

Abstract: Medication adherence to highly active antiretroviral therapy (HAART) is currently a topic of major importance in human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome care. HAART has dramatically reduced morbidity and mortality from HIV infection. Many people with HIV now live active and productive lives, with the disease itself having minimal impact on their lifespan. Unlike treatment for other chronic diseases, achieving the full benefit of HAART requires an extremely high level of adherence to potent antiretroviral combinations that is often difficult to achieve given the high pill burdens, drug interactions and adverse events associated with treatment. In this paper, the present knowledge regarding antiretroviral medication adherence is summarized with a focus on understanding the importance of adherence, the relationship between adherence and treatment response, the challenges and barriers facing patients trying to achieve optimal adherence, reasons for nonadherence, and the current directions and issues relevant to future adherence research.

73. Patel, R. P. and Taylor, S. D. Factors affecting medication adherence in hypertensive patients. *Ann Pharmacother.* 2002 Jan; 36(1):40-5.

Keywords: Adult/ Age Factors/ Aged/ Antihypertensive Agents: *therapeutic use/

Attitude/ Blood Pressure: drug effects: physiology/ Cross-Sectional Studies/ Data Collection/ Education/ Female/ Humans/ Hypertension: complications: *drug therapy: *psychology/ Internal-External Control/ Male/ Marriage/ Middle Aged/ Patient Compliance: *psychology/ Prospective Studies/ Questionnaires/ Research Support, Non-U.S. Gov't/ Sex Factors

Abstract: BACKGROUND: Adherence to medication is a critical factor in the continued health and well-being of patients with hypertension. Patients' acceptance of medical advice and information may be influenced by their subjective beliefs about their health condition; therefore, it is essential that their beliefs be taken into account when giving health advice or medical treatment. OBJECTIVE: To determine whether a relationship exists between illness attribution, perceived control, and adherence to antihypertensive medications. METHODS: A prospective, cross-sectional survey of hypertensive patients was conducted at the University of Michigan Medical Centers, Hypertension Clinic, Ann Arbor, MI. One hundred two patients with a goal to reduce their blood pressure were included in the study. Written and follow-up telephone survey questions assessing patients' illness attributions, perceived control, and medication adherence were administered. Associations between these variables were analyzed using correlation analyses. RESULTS: The majority of patients (67.7%) were adherent with their hypertensive medications. Patients indicated that modifiable variables were the most common attribution believed to cause hypertension; however, there was no significant relationship to medication adherence. A significant inverse relationship was found between perceived control over hypertension and medication adherence ($p < 0.01$). CONCLUSIONS: The findings suggest that patients' greater perception of control over trying to reduce blood pressure may result in decreased reliance on medications and subsequent nonadherence to drug therapy. Implications of these findings on pharmacy practice are discussed.

74. Patterson, T. L.; Lacro, J.; McKibbin, C. L.; Moscona, S.; Hughs, T., and Jeste, D. V. Medication management ability assessment: results from a performance-based measure in older outpatients with schizophrenia. *J Clin Psychopharmacol.* 2002 Feb; 22(1):11-9.

Keywords: Adult/ Age Factors/ Aged/ Antipsychotic Agents: *administration & dosage: adverse effects/ Aptitude/ Female/ Humans/ Male/ Mental Status Schedule/ Middle Aged/ Patient Compliance: *psychology/ Patient Education/ Psychotic Disorders: diagnosis: *drug therapy: psychology/ Research Support, U.S. Gov't, Non-P.H.S./ Research Support, U.S. Gov't, P.H.S./ Role Playing/ Schizophrenia: diagnosis: *drug therapy/ *Schizophrenic Psychology/ Self Administration: *psychology

Abstract: Patients with schizophrenia who adhere to physicians' recommended use of medications are less likely to relapse than those who do not. Self-report measures of adherence have been criticized on a number of grounds. Here we describe a performance-based measure of medication management, the Medication Management Ability Assessment (MMAA), which represents a modification of the Medication Management Test used in individuals with HIV infection. Subjects were 104 patients older than 45 years with diagnoses of schizophrenia or schizoaffective disorder, and 33 normal comparison subjects (NCs). Subjects participated in a role-play task (MMAA) that simulated a prescribed medication regimen similar in complexity to one that an

older person is likely to be exposed to. The total number of pills over that prescribed, total number of pills under that prescribed, and total number of correct responses were calculated. Self-report and prescription record data on adherence as well as data on measures of psychopathology, global cognitive status, and other clinical measures were also gathered. MMAA role-plays required 15 minutes, and its 1-week test-retest reliability was excellent (intraclass correlation coefficient, 0.96). Patients committed significantly more errors in medication management compared with NCs. Significantly more patients were classified as being nonadherent (i.e., taking +/-5%, 10%, 15%, or 20% of prescribed pills) compared with NCs. Patients with more severe cognitive deficits performed worse on the MMAA. MMAA performance was significantly related to prescription refill records, performance-based measures of everyday functioning, and self-reported quality of life. The MMAA is a useful instrument for observing ability to manage medications in patients with schizophrenia. The measure was related to severity of cognitive impairment, suggesting that adherence may improve with psychotropic and psychosocial interventions that target these deficits.

75. Pontali, E. Facilitating adherence to highly active antiretroviral therapy in children with HIV infection: what are the issues and what can be done? *Paediatr Drugs*. 2005; 7(3):137-49.
Keywords: *Antiretroviral Therapy, Highly Active/ Child/ HIV Infections: *drug therapy/ Humans/ *Patient Compliance
Abstract: Treatment of HIV infection with highly active antiretroviral therapy (HAART) requires sustained adherence to treatment to maintain efficacy. In pediatric patients, adherence to HAART represents a significant challenge for treated children and for their caregivers and healthcare providers. Many factors can affect adherence to HAART including: (i) factors related to the patient and his/her family; (ii) factors related to the drug/medication; and (iii) factors related to the healthcare system. Different strategies can be employed to tackle the specific obstacles identified in these three groups, and thus to facilitate adherence. Among the key interventions centered on the patient and his/her family are the tailoring of the HAART regimen to the daily activities of the child and his/her family, and the implementation of an intensive education program on adherence for the child and the caregiver, prior to starting the treatment. Specific medication-related problems (depending on drug pharmacokinetic and pharmacodynamic properties, taste and palatability, food interactions, etc.) exist; such problems can not be solved solely by clinicians or by families. Greater commitment of the pharmaceutical industry is needed, and innovative solutions have to be identified by clinicians in partnership with drug manufacturers. Furthermore, the development of an 'adherence strategy/program' can be recommended to all institutions working in pediatric HIV infection. Most of the necessary interventions to be included in such programs can be easily implemented, but they require trained and committed staff (and institutions), and time to be spent with patients and their caregivers.
76. Raji, M. A.; Kuo, Y. F.; Salazar, J. A.; Satish, S., and Goodwin, J. S. Ethnic differences in antihypertensive medication use in the elderly. *Ann Pharmacother*. 2004 Feb; 38(2):209-14.
Keywords: Aged/ Aged, 80 and over/ Antihypertensive Agents: administration &

dosage: *therapeutic use/ Continental Population Groups/ Cross-Sectional Studies/ Ethnic Groups/ Female/ Humans/ Hypertension: *drug therapy/ Insurance, Health/ Logistic Models/ Male/ Nutrition Surveys/ Patient Compliance: *ethnology: statistics & numerical data/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./ Social Class/ Texas

Abstract: BACKGROUND: Determining the optimal treatment for hypertension in very old patients requires better understanding of interethnic differences in patterns and predictors of antihypertensive drug use in this population. OBJECTIVE: To investigate interethnic variations in antihypertensive drug use in a tri-ethnic sample of community-dwelling adults aged ≥ 77 years. METHODS: We performed a cross-sectional study of non-Hispanic white, black, and Hispanic adults ≥ 77 years old residing in Galveston County, TX. In-home interviews in 1997 and 1998 assessed blood pressures and antihypertensive medication use in 281 subjects who reported having hypertension or who had a systolic blood pressure ≥ 140 mm Hg and/or diastolic blood pressure ≥ 90 mm Hg. RESULTS: Of the population evaluated, 62.9% of non-Hispanic whites, 60.2% of blacks, and 45.2% of Hispanics with hypertension were on antihypertensive medications ($p < 0.027$ across the ethnic groups). After adjusting for age, gender, years of education, household income, Medicaid insurance, number of physician visits, and cognitive function, Hispanic ethnicity, unlike black ethnicity, continued to be significantly associated with lower use of antihypertensive drugs compared with non-Hispanic whites (OR 0.41; 95% CI 0.19 to 0.90). Characteristics associated with the lower use of antihypertensive drugs included older age and low income in whites, poor cognition and infrequent physician visits in blacks, and lack of Medicaid insurance in Hispanics. CONCLUSIONS: In the elderly, Hispanic ethnicity, unlike black ethnicity, is significantly associated with lower use of antihypertensive drug therapy compared with non-Hispanic white ethnicity, adjusting for relevant sociodemographic and health factors.

77. Rapi, J. [Hypertension therapy and patient compliance]. *Orv Hetil.* 2002 Aug 25; 143(34):1979-83.

Keywords: Antihypertensive Agents: *administration & dosage: adverse effects/ Blood Pressure Determination/ English Abstract/ Humans/ Hypertension: *drug therapy: psychology/ *Patient Compliance: psychology/ Patient Education/ *Physician's Role/ Questionnaires

Abstract: In the treatment of chronic disease like hypertension it is very important to achieve good patient compliance. One third of the patients however takes his medication irregularly. The failure of the treatment is usually caused by the patient, who is not aware of his illness, he feels healthy that's why he does not go to see the doctor or he stops taking the medicine. The cause of bad compliance can also be the doctor who does not spend enough time and energy on his patients. Rarely the therapy is broken off because of the side effects of the medication. In the last year 100 patients with hypertension were asked with help of a questionnaire about their drug-taking habits and their knowledge about hypertension. From the answers we found out that one third of the patients takes his drugs irregularly. Less than half of the patients reaches the normotension. Most of the patients who have been treated for many years do not know the goal blood pressure, the possible complications of hypertension, the

goal of the treatment. Often they do not even know the name of their medicine. Compliance is a complicated problem. Improvement could be reached by regular teaching of the patients, by teaching the patients how to measure blood pressure at home, by increasing the number of educational publications, by regular training of the doctors, by keeping the rules of the treatment, by using modern and long-term effective drugs. It would be important to start with teaching the healthy way of living already at a young age.

78. Rettenbacher, M. A.; Burns, T.; Kemmler, G., and Fleischhacker, W. W. Schizophrenia: attitudes of patients and professional carers towards the illness and antipsychotic medication. *Pharmacopsychiatry*. 2004 May; 37(3):103-9.
Keywords: Adult/ Aged/ Antipsychotic Agents: *therapeutic use/ *Attitude/ Comparative Study/ Cross-Sectional Studies/ Female/ Health Personnel: psychology/ Humans/ Interviews/ Male/ Middle Aged/ *Patient Compliance/ Patient Education/ Psychiatric Status Rating Scales/ Schizophrenia: *drug therapy: therapy/ *Schizophrenic Psychology/ Treatment Refusal
Abstract: BACKGROUND: Non-compliance with antipsychotic medication is known to be one of the major reasons for relapse in patients with schizophrenia. Carers might be able to reduce noncompliance by enhancing the patient's knowledge about the illness and antipsychotic medication and by carrying out regular benefit/risk discussions concerning the treatment plan, thereby improving the patient's attitudes towards pharmacological treatment. METHODS: In this cross-sectional study we used a semistructured interview to investigate the attitudes towards the illness and antipsychotic medication of patients with schizophrenia and of medical and non-medical professionals involved in their treatment. An array of 24 outpatients with schizophrenia, 21 psychiatrists, 26 nurses and 42 non-medical health professionals were investigated. RESULTS: We found compliance in 54.2%, partial compliance in 8.3% and non-compliance in 37.5% of patients. More patients than carers judged other disorders like epilepsy and diabetes to be worse than schizophrenia. Patients stated more often, that they would not encourage a relative to take antipsychotic medication. An extent of 71.4% of psychiatrists and 35% of non-medical professionals reported a general willingness to take antipsychotic medication themselves, if they were to suffer from schizophrenia. CONCLUSIONS: Our results indicate that the attitude of carers is not only different from patients but also remarkably heterogeneous within the group of carers. This needs to be taken into account when planning compliance-enhancing measures.
79. Reynolds, N. R. Adherence to antiretroviral therapies: state of the science. *Curr HIV Res*. 2004 Jul; 2(3):207-14.
Keywords: Anti-Retroviral Agents: *therapeutic use/ HIV Infections: *drug therapy/ Humans/ *Patient Compliance/ Patient Education/ Randomized Controlled Trials/ Research Design/ Research Support, U.S. Gov't, P.H.S./ Risk Factors
Abstract: HIV-related morbidity and mortality have been dramatically improved in populations treated with combination antiretroviral therapy. Although it is widely recognized that adherence to the antiretroviral medication regimens is vital to treatment success, rates of adherence to the regimens are often poor. There is a large body of

research exploring the problem of adherence to antiretroviral medications. The literature is, to date, dominated by reports identifying factors that are predictive or associated with antiretroviral adherence. Adherence is increasingly understood as a dynamic behavior influenced by a matrix of interrelated factors that change over time. Preliminary reports suggest varying degrees of success with strategies designed to improve adherence. Multifaceted strategies appear to be the most promising; however, there are few controlled studies substantiating the effectiveness of these approaches and the mechanisms by which the interventions promote adherence are not well understood. More well powered, rigorously evaluated antiretroviral adherence intervention trials are urgently needed. Further, problems in the field exist because of limitations in the available adherence measures. This paper provides a comprehensive review and analysis of the state-of-the-science of this body of work. Despite substantial attention to antiretroviral adherence in recent years, there remain significant gaps in our understanding.

80. Reynolds, N. R.; Testa, M. A.; Marc, L. G.; Chesney, M. A.; Neidig, J. L.; Smith, S. R.; Vella, S., and Robbins, G. K. Factors influencing medication adherence beliefs and self-efficacy in persons naive to antiretroviral therapy: a multicenter, cross-sectional study. *AIDS Behav.* 2004 Jun; 8(2):141-50.
- Keywords: Acquired Immunodeficiency Syndrome: *drug therapy/ Adolescent/ Adult/ Age Factors/ Anti-Retroviral Agents: *therapeutic use/ *Attitude to Health/ Cross-Sectional Studies/ Female/ Health Status/ Humans/ Male/ Middle Aged/ *Patient Compliance/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./ *Self Efficacy/ Social Support/ Stress, Psychological
- Notes: CORPORATE NAME: Protocol Teams of ACTG 384, ACTG 731 and A5031s.
- Abstract: It is widely recognized that adherence to antiretroviral therapy is critical to long-term treatment success, yet rates of adherence to antiretroviral medications are frequently subtherapeutic. Beliefs about antiretroviral therapy and psychosocial characteristics of HIV-positive persons naive to therapy may influence early experience with antiretroviral medication adherence and therefore could be important when designing programs to improve adherence to antiretroviral therapy. As part of a multicenter AIDS Clinical Trial Group (ACTG 384) study, 980 antiretroviral-naive subjects (82% male, 47% White, median age 36 years, and median CD4 cell count 278 cells/mm³) completed a self-administered questionnaire prior to random treatment assignment of initial antiretroviral medications. Measures of symptom distress, general health and well-being, and personal and situational factors including demographic characteristics, social support, self-efficacy, depression, stress, and current adherence to (nonantiretroviral) medications were recorded. Associations among variables were explored using correlation and regression analyses. Beliefs about the importance of antiretroviral adherence and ability to take antiretroviral medications as directed (adherence self-efficacy) were generally positive. Fifty-six percent of the participants were "extremely sure" of their ability to take all medications as directed and 48% were "extremely sure" that antiretroviral nonadherence would cause resistance, but only 37% were as sure that antiretroviral therapy would benefit their health. Less-positive beliefs about antiretroviral therapy adherence were associated with greater stress, depression, and symptom distress. More-positive beliefs about antiretroviral therapy

adherence were associated with better scores on health perception, functional health, social-emotional-cognitive function, social support, role function, younger age, and higher education (r values = 0.09-0.24, all $p < .001$). Among the subset of 325 participants reporting current use of medications (nonantiretrovirals) during the prior month, depression was the strongest correlate of nonadherence ($r = 0.33$, $p < .001$). The most common reasons for nonadherence to the medications were "simply forgot" (33%), "away from home" (27%), and "busy" (26%). In conclusion, in a large, multicenter survey, personal and situational factors, such as depression, stress, and lower education, were associated with less certainty about the potential for antiretroviral therapy effectiveness and one's perceived ability to adhere to therapy. Findings from these analyses suggest a role for baseline screening for adherence predictors and focused interventions to address modifiable factors placing persons at high risk for poor adherence prior to antiretroviral treatment initiation.

81. Rogers, A.; Day, J.; Randall, F., and Bentall, R. P. Patients' understanding and participation in a trial designed to improve the management of anti-psychotic medication: a qualitative study. *Soc Psychiatry Psychiatr Epidemiol.* 2003 Dec; 38(12):720-7.
Keywords: Adolescent/ Adult/ Antipsychotic Agents: adverse effects: *therapeutic use/ England/ Female/ Follow-Up Studies/ *Health Knowledge, Attitudes, Practice/ Humans/ Male/ Middle Aged/ Patient Acceptance of Health Care: *psychology/ Patient Care Team/ Patient Compliance: psychology/ *Patient Education/ Patient Participation: *psychology/ Psychotic Disorders: *drug therapy: psychology/ Research Support, Non-U.S. Gov't
Abstract: BACKGROUND: Combining qualitative methods alongside randomised controlled trials in the health field has been advocated but has only been used rarely in mental health services research. The aim of this study was to illuminate patients' understanding of the nature and purpose and outcomes of a trial designed to improve the management of neuroleptic medication. METHODS: Qualitative interviews were carried out with a group of patients participating in a trial comparing a psycho-educational and therapeutic alliance intervention in managing anti-psychotic medication. RESULTS: Our findings highlighted aspects of the experience, process and outcome of the trial, which remain latent in the quantitative assessment. The issue of enlarged self-efficacy emerging when patients were involved in communications with professionals in the trial was important. Whilst the participants provided positive feedback about their involvement in the trial, they struggled to recall the details of the intervention to which they had been exposed. Patients did not readily identify the content and concepts characterising each condition; rather they prioritised the opportunity for communication and contact with the researchers. CONCLUSIONS: Qualitative research accompanying trials illuminates and adds to the quantitative outcomes. The key to interpreting participants' accounts of the process and outcomes of this trial suggests the need to give greater emphasis to participants' past and current experience of service contact.
82. Rubin, R. R. Adherence to pharmacologic therapy in patients with type 2 diabetes mellitus. *Am J Med.* 2005 May; 118 Suppl 5A:27S-34S.

Keywords: Depression: etiology: prevention & control/ Diabetes Mellitus, Type 2: complications: *drug therapy: psychology/ Drug Costs/ Health Knowledge, Attitudes, Practice/ Humans/ Hypoglycemic Agents: economics: *therapeutic use/ *Patient Compliance: psychology: statistics & numerical data/ Patient Education: methods: statistics & numerical data/ Physician-Patient Relations/ Stress, Psychological: etiology: prevention & control

Abstract: Many patients who have type 2 diabetes mellitus (DM) require several different medications. Although these agents can substantially reduce diabetes-related morbidity and mortality, the extent of treatment benefits may be limited by a lack of treatment adherence. Unfortunately, little information is available on treatment adherence in patients with type 2 DM. Available data indicate substantial opportunity for improving clinical outcomes through improved treatment adherence. Factors that appear to influence adherence include the patient's comprehension of the treatment regimen and its benefits, adverse effects, medication costs, and regimen complexity, as well as the patient's emotional well-being. Outcomes research emphasizes the importance of effective patient-provider communication in overcoming some of the barriers to adherence. This article offers specific suggestions for improving adherence in patients with type 2 DM seen in general clinical practice.

83. Rybacki, J. J. Improving cardiovascular health in postmenopausal women by addressing medication adherence issues. *J Am Pharm Assoc (Wash)*. 2002 Jan-2002 Feb 28; 42(1):63-71; quiz 72-3.

Keywords: Aged/ Cardiovascular Diseases: etiology: *prevention & control/ Female/ Guidelines/ *Hormone Replacement Therapy/ Humans/ Hyperlipidemia: complications: *drug therapy/ Hypertension: complications: *drug therapy/ Middle Aged/ *Patient Compliance/ Patient Education/ Pharmacists/ Postmenopause/ Risk Factors/ Role/ Women's Health

Abstract: **OBJECTIVE:** To review medication adherence issues that relate to managing cardiovascular health in postmenopausal women and to explore strategies pharmacists can use to improve outcomes by identifying and resolving adherence problems. **DATA SOURCES:** Published articles identified through MEDLINE using the search terms adherence, compliance, cardiovascular, and menopause. Additional articles and data were identified from the bibliographies of the retrieved articles and from Web sites and reports from the National Council on Patient Information and Education, North American Menopause Society, American College of Obstetricians and Gynecologists, and American Heart Association. **DATA SYNTHESIS:** Cardiovascular disease is the leading killer of women, a fact many women do not recognize. Although effective pharmacologic treatments for managing risk factors for cardiovascular disease have been developed, these therapies are underprescribed, and patient adherence to them is often poor. Efforts to increase postmenopausal women's awareness of cardiovascular disease and the efficacy of therapeutic regimens can help improve such patients' adherence to these lifesaving treatments. **CONCLUSION:** As one of the most accessible health care professionals, pharmacists are well positioned to provide counseling about the importance of medication adherence, help measure and optimize outcomes from medication use, and help patients find objective and authoritative sources of information about their conditions. By working with postmenopausal women

to enhance their adherence, pharmacists can help them improve their cardiovascular health.

84. Savini, C. J.; James, C. W., and DiGuglielmo, D. J. Survey of patient and clinician attitudes on adherence in a rural HIV clinic. *J Assoc Nurses AIDS Care*. 2003 May-2003 Jun 30; 14(3):72-5.
Keywords: *Ambulatory Care Facilities/ Anti-HIV Agents: adverse effects: therapeutic use/ *Attitude of Health Personnel/ Comparative Study/ Delaware/ HIV Infections: drug therapy: *psychology/ Health Care Surveys/ Humans/ Medical Staff: *psychology/ Needs Assessment/ Nurse Practitioners: psychology/ Nursing Staff: *psychology/ Patient Compliance: *psychology/ Patient Education/ Patient Participation/ Questionnaires/ *Rural Health Services/ Self Administration: adverse effects: psychology
Abstract: Adherence is critical to the success of antiretroviral therapy, with near perfect medication taking required for optimal results. Many factors may affect a patient's ability to adhere to antiretroviral therapy, including complexity of the regimen and adverse effects from medications. Previous research showed that some disparity may exist between clinicians' and patients' attitudes regarding characteristics of a regimen that are likely to affect adherence. The present survey was conducted in a rural HIV clinic and confirmed that similar differences were present in clinician and patient perceptions of adherence barriers. The patient population noted side effects and complexity of schedule as most likely to affect adherence, illustrating the need for thorough discussion of new regimens and involvement of the patient in treatment decisions.
85. Sawyer, S. M. Action plans, self-monitoring and adherence: changing behaviour to promote better self-management. *Med J Aust*. 2002 Sep 16; 177 Suppl:S72-4.
Keywords: Adult/ Anti-Asthmatic Agents: therapeutic use/ Asthma: rehabilitation: *therapy/ Child/ Guideline Adherence/ Humans/ Patient Education/ *Self Care
Abstract: What we know: Patient self-management improves asthma outcomes. The key features of self-management are having a written asthma action plan, monitoring asthma symptoms and seeking regular review. Self-management is an important goal. Doctors can learn how to improve patient self-management. Multiple attitudinal barriers limit adherence to asthma preventers, especially inhaled corticosteroids in children. Appointment reminders improve clinic attendance. Poor adherence with the asthma treatment regimen is common. Simplification of the healthcare regimen is associated with better adherence. What we need to know: What is it about a written action plan that is the key to its effect? Is it mostly useful for managing acute asthma exacerbations or is it also useful for day-to-day management in the longer term? How can broader implementation of action plans be achieved in Australia? How can appointment reminders be incorporated into regular medical care? How can we modify patient attitudinal and knowledge barriers to preventer medication? How can we improve compliance with asthma preventer medication?
86. Sawyer, S. M. and Aroni, R. A. Sticky issue of adherence. *J Paediatr Child Health*. 2003 Jan-2003 Feb 28; 39(1):2-5.

Keywords: Adolescent/ Asthma: drug therapy/ Child/ Chronic Disease/ Humans/
*Patient Compliance/ *Patient Education: methods/ Physician-Patient Relations/
Prescriptions, Drug/ Self Administration: *psychology/ Terminology

Abstract: The phenomenon of adherence, also known as compliance, is the vital link that allows effective medications to have the desired clinical effect when self-administered. It is often assumed that the population is generally adherent, but more than 50% of people with chronic illness do not take their medication as prescribed. We highlight how the terminology and language of non-adherence act to conceptualize adherence as a patient problem in a manner that is inadvertently judgmental, narrowly focused and clinically unhelpful. In contrast, knowledge of the dynamic nature of adherence promotes the conceptualization of adherence as the common problem that it is, where the responsibility for improving it lies primarily with the health professional. The example of asthma is used to highlight how individually focused clinical strategies can fit within a population perspective that, in its entirety, can be conceptualized as a framework of adherence-promoting strategies.

87. Schultz, J. S.; O'Donnell, J. C.; McDonough, K. L.; Sasane, R., and Meyer, J. Determinants of compliance with statin therapy and low-density lipoprotein cholesterol goal attainment in a managed care population. *Am J Manag Care*. 2005 May; 11(5):306-12.
- Keywords: Aged/ Anticholesteremic Agents: *therapeutic use/ Comparative Study/ Female/ Humans/ Hydroxymethylglutaryl-CoA Reductase Inhibitors: *therapeutic use/ Lipoproteins, LDL Cholesterol: *blood/ Longitudinal Studies/ Male/ Managed Care Programs: *organization & administration/ Middle Aged/ *Patient Compliance/ Research Support, Non-U.S. Gov't/ Retrospective Studies
- Abstract: OBJECTIVE: To identify determinants of medication compliance and low-density lipoprotein cholesterol goal attainment. Study Design: This retrospective analysis used claims data from a large, national, employment-based independent practice association database. Subjects were identified based on the existence of a filled prescription for statin therapy between April 1, 1999, and June 30, 2001. Subjects had to be 18 years or older, continuously enrolled in the health plan for 2 years, and new users of statin therapy. METHODS: Multivariate logistic regression models were used to identify predictors of compliance and goal attainment in high-risk subjects. RESULTS: As the mean copayment for statins increased, there was a decrease in the likelihood of compliance. Of the subjects with laboratory results, 50.7% attained their low-density lipoprotein cholesterol goal level established by National Cholesterol Education Program Adult Treatment Panel III guidelines. Older individuals and men were more likely to reach their low-density lipoprotein cholesterol target goal, as were individuals who were compliant with their statin therapy. CONCLUSIONS: Compliance with statin therapy in the managed care setting remains poor. Of particular concern is the lower level of compliance among women and younger high-risk patients, along with patients who have fewer outpatient visits associated with hyperlipidemia and lower incidences of cholesterol testing.
88. Sharpe, T. T.; Lee, L. M.; Nakashima, A. K.; Elam-Evans, L. D., and Fleming, P. L. Crack cocaine use and adherence to antiretroviral treatment among HIV-infected black

women. *J Community Health*. 2004 Apr; 29(2):117-27.

Keywords: Adult/ African Americans: *psychology/ Aged/ Antiretroviral Therapy, Highly Active: *utilization/ Cocaine-Related Disorders: complications: *ethnology/ *Crack Cocaine/ Female/ HIV Infections: complications: *drug therapy: ethnology/ Humans/ Interviews/ Logistic Models/ Middle Aged/ Patient Compliance: *ethnology/ Socioeconomic Factors/ United States: epidemiology/ Women's Health: *ethnology
Abstract: Since the appearance of crack cocaine in the 1980s, unprecedented numbers of women have become addicted. A disproportionate number of female crack users are Black and poor. We analyzed interview data of HIV -infected women > or = 18 years of age reported to 12 health departments between July 1997 and December 2000 to ascertain if Black women reported crack use more than other HIV -infected women and to examine the relationship between crack use and antiretroviral treatment (ART) adherence among Black women. Of 1655 HIV -infected women, 585 (35%) were nonusers of drugs, 694 (42%) were users of other drugs and 376 (23%) were crack users. Of the 1196 (72%) Black women, 306 (26%) were crack users. We used logistic regression to examine the effect of crack use on adherence to ART, controlling for age and education among Black women. In multivariate analysis, crack users and users of other drugs were less likely than non-users to take their ART medicines exactly as prescribed (odds ratio [OR] = 0.37; 95% confidence interval [CI] = 0.24-0.56), OR = 0.47; 95% CI = 0.36-0.68), respectively. HIV -infected Black women substance users, especially crack cocaine users, may require sustained treatment and counseling to help them reduce substance use and adhere to ART.

89. Skoglund, P.; Isacson, D., and Kjellgren, K. I. Analgesic medication--communication at pharmacies. *Patient Educ Couns*. 2003 Oct; 51(2):155-61.

Keywords: Adult/ Aged/ Aged, 80 and over/ *Analgesics: administration & dosage/ *Communication/ *Community Pharmacy Services/ Cooperative Behavior/ Female/ Humans/ Male/ Middle Aged/ Needs Assessment/ Patient Compliance: psychology/ Patient Education/ Patient Participation: psychology/ Pharmacists: *psychology/ *Professional-Patient Relations/ Questionnaires/ Research Support, Non-U.S. Gov't/ Role/ Sweden/ Tape Recording

Abstract: Treatment conducted in co-operation with the client is decisive for a successful result i.e. adherence to medication, satisfaction and improved health outcome. The aim of this study was to capture the communication between clients and pharmacists when dispensing prescriptions of analgesics in community pharmacies. The study was based on 42 authentic audio-recordings of clients' communication with pharmacists. Most clients had a passive role and the analysis testify to a short and asymmetric communication between the interlocutors. On average, the clients asked three questions. One-third of these questions were related to medication, i.e. dose, effect, written information, symptoms or disease. Of the questions asked by pharmacists, 2% were open in character. The study confirms previous research in other settings on caregiver dominance in consultations. Concordance in pharmaceutical care assumes a much more active client. Therefore facilitating a more active role for the clients at pharmacies is of the outmost importance.

90. Smith, S. R.; Golin, C. E., and Reif, S. Influence of time stress and other variables on counseling by pharmacists about antiretroviral medications. *Am J Health Syst Pharm.* 2004 Jun 1; 61(11):1120-9.
Keywords: Adult/ Aged/ Ambulatory Care/ Anti-HIV Agents: *therapeutic use/
*Community Pharmacy Services/ Female/ HIV Infections: *drug therapy/ Humans/ Job Satisfaction/ Male/ Middle Aged/ Patient Compliance/ *Patient Education/
Pharmacists/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./
Time Factors/ Workload
Abstract: PURPOSE: The medication counseling practices of pharmacists caring for patients with HIV infection and the factors influencing their counseling behaviors regarding antiretroviral medications were examined. METHODS: A questionnaire was mailed in February 2000 to pharmacist-managers of 573 ambulatory care pharmacies providing medications to beneficiaries of the North Carolina AIDS Drug Assistance Program. The frequency of and attitudes about adherence counseling for patients with HIV infection; the time allocated, spent, and needed to provide high-quality care to these patients; and pharmacists' time pressure and time stress were measured. RESULTS: Of the 573 questionnaires mailed, 440 (77%) were usable. Fifty-nine percent of pharmacists reported that they did not have enough time to provide adherence counseling to patients receiving antiretroviral medications, and 45% reported that most of their patients did not receive such counseling. Time-stressed pharmacists were significantly less likely to perform 12 of 22 counseling behaviors, including discussing adverse effects (13% versus 24%, $p < 0.0089$), drug interactions (13% versus 31%, $p < 0.0001$), and what to do if a dose is missed (8% versus 23%, $p < 0.0001$). Multivariate analysis revealed that time stress, perceived skill and interest in adherence counseling, and job satisfaction were significantly associated with the counseling index. CONCLUSION: Time pressure and other barriers appeared to limit the care that some pharmacists offered to patients with HIV infection. Pharmacist age, job satisfaction, and perceived skill and interest in adherence counseling influenced the comprehensiveness of the counseling pharmacists provided for patients receiving antiretroviral medications.
91. Son, H.; Park, K.; Kim, S. W., and Paick, J. S. Reasons for discontinuation of sildenafil citrate after successful restoration of erectile function. *Asian J Androl.* 2004 Jun; 6(2):117-20.
Keywords: Adult/ Aged/ Data Collection/ Drug Costs/ Female/ Humans/ Impotence: complications: *drug therapy: psychology/ Male/ Middle Aged/ Patient Compliance/ Phosphodiesterase Inhibitors: *adverse effects: economics: *therapeutic use/
Piperazines: *adverse effects: economics: *therapeutic use/ Sexual Behavior/
Telephone
Abstract: AIM: To investigate the reasons for discontinuations of sildenafil after the successful restoration of erectile function. METHODS: One hundred fifty six patients, whose scores of erectile function domain of the 15-item International Index of Erectile Function (IIEF) increased to 26 or more after sildenafil medication, were included in this study. Six-months after the first sildenafil prescription, compliance to medication and the reason for discontinuity were reviewed by chart or surveyed by telephone. RESULTS: Fifty-four (34.6 %) of the 156 successfully treated patients discontinued

sildenafil medication. The reasons for discontinuance were shortcomings in the partners' or patients' emotional readiness for the restoration of sexual life after long-term abstinence (37.0 %), fear of possible side effects (18.5 %), recovery of spontaneous erection (14.8 %), postponement of ED treatment because of co-morbid disease treatment (11.1 %), unwillingness to accept drug-dependent erection (7.4 %), high drug cost (3.7 %), unacceptability of planned sexual activity (3.7 %) and lack of sexual interest (3.7 %). CONCLUSION: The reasons for discontinuing sildenafil medication were primarily emotional or relationship-oriented, which indicates that simple recovery of a rigid erection is insufficient to restore sexual activity. More education about the effects of drug and the counseling of both partners is recommended to promote the successful recovery of sexual activity.

92. Sonia, M.; Ikram, D.; Radhouane, F., and Ali, B. K. [Treatment compliance in asthma: a Tunisian transversal study]. *Tunis Med.* 2005 Aug; 83(8):448-52.
Keywords: Administration, Inhalation/ Adrenal Cortex Hormones: administration & dosage: therapeutic use/ Adult/ Androstadienes: administration & dosage: therapeutic use/ Anti-Asthmatic Agents: administration & dosage: therapeutic use/ Asthma: *drug therapy/ Beclomethasone: administration & dosage: therapeutic use/ Bronchodilator Agents: administration & dosage: therapeutic use/ Comparative Study/ Cross-Over Studies/ Disease Progression/ English Abstract/ Female/ Humans/ Male/ Middle Aged/ *Patient Compliance/ Patient Education/ Questionnaires/ Socioeconomic Factors/ Theophylline: administration & dosage: therapeutic use/ Time Factors/ Tunisia
Abstract: As a chronic disease, asthma requires a continued treatment and poses the problem of compliance with medication. To study in a Tunisian population of asthmatics, the level of compliance and the factors affecting it, we included 190 adults with persistent asthma in a transversal study using a self-questionnaire. The mean age was 38.56 years. 2/3 of patients had medium or poor socioeconomic status. 1/3 had severe persistent asthma, progressing for 5 years in 68 % of case. All patients received inhaled corticosteroids; only 44 had high dosed corticosteroids. 29.5 % of patients were compliant with medication in our study. Omission and intentional negligence were the two main reasons for non-compliance. Level of compliance was positively related to socioeconomic status, urban way of life, history of hospitalization, high dosed corticosteroids and knowledge of their indication. We conclude that treatment compliance in asthma is very low. Further efforts should be made to improve compliance: by increasing the accessibility of medication and by the educational programs which should be a priority in the management of asthma.
93. Soriano, J. B.; Rabe, K. F., and Vermeire, P. A. Predictors of poor asthma control in European adults. *J Asthma.* 2003; 40(7):803-13.
Keywords: Adult/ Asthma: *diagnosis: *therapy/ Attitude to Health/ Europe/ Female/ Health Services Accessibility/ Health Surveys/ Humans/ Male/ Multivariate Analysis/ Patient Compliance/ Patient Education/ Research Support, Non-U.S. Gov't/ Respiratory Function Tests/ Self Care
Abstract: Asthmatics in the community suffer morbidity due to poor asthma control. The Global Initiative for Asthma (GINA) guidelines established minimum goals for the management of asthma. Our objective was to quantify the demographic and clinical

factors associated with asthma control in adult asthmatics. A population sample of asthmatics 16 years and older was obtained by random digit dialing in seven European countries (France, Germany, Italy, The Netherlands, Spain, Sweden, and United Kingdom), and asthma control was quantified according to daytime and nighttime symptoms, severe episodes, and limits on daily activities due to asthma. Among the 2050 adult current asthmatics surveyed, 35% had good asthma control (0 or 1 GINA goals failed), 40% had moderate asthma control (2 or 3 GINA goals failed), and 25% had poor asthma control (4 or 5 GINA goals failed). Fewer subjects with poor than those with good asthma control had ever received a lung function test, and significantly fewer patients with poor asthma control had been taught by a doctor or nurse how to use their peak flow meter. When questioned about the underlying cause of asthma, only 7.8% of asthmatics mentioned airway inflammation, and only 17.6% stated that inhaled corticosteroids were the most effective medication for reducing airway inflammation. There was more use of quick relief bronchodilator medications in the past 4 weeks among patients with poor asthma control. Asthma management practices and the knowledge, attitudes, and behavior of adult asthmatics in the general population are associated with the degree of asthma control.

94. Stout, B. D.; Leon, M. P., and Niccolai, L. M. Nonadherence to antiretroviral therapy in HIV-positive patients in Costa Rica. *AIDS Patient Care STDS*. 2004 May; 18(5):297-304.
Keywords: Adolescent/ Adult/ Aged/ Anti-HIV Agents: *therapeutic use/ CD4 Lymphocyte Count/ Costa Rica/ Cross-Sectional Studies/ Female/ *HIV Seropositivity: drug therapy: psychology/ Health Knowledge, Attitudes, Practice/ Health Services Accessibility: standards/ Humans/ Logistic Models/ Male/ Middle Aged/ Motivation/ Needs Assessment/ Outpatient Clinics, Hospital/ *Patient Compliance: psychology: statistics & numerical data/ Patient Education: standards/ Prevalence/ Questionnaires/ Research Support, Non-U.S. Gov't/ Risk Factors/ Transportation
Abstract: A cross-sectional study was performed among seropositive individuals who sought HIV treatment at an outpatient clinic in San Jose, Costa Rica, to determine the prevalence, predictors, and reasons for nonadherence to antiretroviral. A structured, face-to-face interview was administered to 88 patients. The primary outcome of adherence was measured as taking 100% of medications within 3 days prior to interview. A number of risk factors, including demographic information, HIV knowledge, logistics of the regimen, and management skills were assessed. Statistical analyses included logistic regression. Eighty-five percent of patients took 100% of their medications in the last 3 days. Factors that were correlated with nonadherence included difficulty in finding transportation to the clinic (odds ratio [OR] = 6.3, $p = 0.01$), not laying pills out as a management skill (OR = 9.9, $p = 0.01$), and prescription instructions to take medication on an empty stomach (OR = 6.7, $p = 0.03$). HIV-positive patients in this Costa Rican sample were fairly adherent to their drug regimens. To increase adherence among non-adherent individuals, interventions that increase access in remote areas and help people manage their regimens may be beneficial.
95. Swanson, J. Compliance with stimulants for attention-deficit/hyperactivity disorder: issues and approaches for improvement. *CNS Drugs*. 2003; 17(2):117-31.

Keywords: Adolescent/ Attention Deficit and Disruptive Behavior Disorders: *drug therapy: psychology/ Central Nervous System Stimulants: *therapeutic use/ Child/ Child, Preschool/ Drug Utilization/ Humans/ Patient Compliance: *psychology/ Patient Education/ Research Support, Non-U.S. Gov't/ Time Factors

Abstract: Attention-deficit/hyperactivity disorder (ADHD) affects approximately 8-10% of school-aged children in the US and for many individuals persists into adolescence and adulthood. Both pharmacological and nonpharmacological (behavioural) therapies are used to treat individuals with ADHD. Treatment with stimulant medications, which include methylphenidate and amphetamine, typically requires multiple daily doses to maintain efficacy. The frequency of treatment, coupled with the importance of timing of doses and the long-term nature of treatment, make noncompliance a particular issue in the treatment of ADHD. Studies report noncompliance rates of 20-65% with stimulant treatment, although there are only limited published studies and these show considerable individual variation. Noncompliance can arise through inadequate supervision of those receiving medication, leading to delayed or missed doses, or through the reluctance of individuals to take medication, which is influenced by a number of factors (e.g. social attitudes, pressures or worries surrounding medication use and the inconvenience of multiple daily doses). Two approaches are likely to increase compliance with stimulant treatment: effective once-daily formulations of medication and improved treatment information. The development of effective once-daily formulations for stimulant treatments removes the need for multiple daily doses, with the associated problems of ensuring adequate treatment supervision and personal privacy. Improved provision of education and information for individuals with ADHD, as well as their families and teachers, should help them address the issues surrounding stimulant medication and allow full participation in the treatment process. Together, these strategies should improve treatment compliance for individuals with ADHD.

96. Taylor, S. A.; Galbraith, S. M., and Mills, R. P. Causes of non-compliance with drug regimens in glaucoma patients: a qualitative study. *J Ocul Pharmacol Ther.* 2002 Oct; 18(5):401-9.

Keywords: Fees, Pharmaceutical/ Glaucoma: *drug therapy: *psychology/ Humans/ Ophthalmic Solutions: economics: therapeutic use/ Patient Education/ Physician-Patient Relations/ *Questionnaires/ Research Support, Non-U.S. Gov't/ *Treatment Refusal

Abstract: The purpose of this study was to gain insights into why patients are not compliant with their glaucoma medications. Patients were recruited from lists provided by two ophthalmologists. Each patient had seen a minimum of two ophthalmologists for their glaucoma, and was taking at least two topical medications for glaucoma. Qualitative methodology was utilized, including two focus groups and eleven in-depth interviews in patients' homes. The results showed that forgetfulness was the number one reported reason for non-compliance. Patients did not claim to be non-compliant specifically because of side effects, but they did complain about them. Communication between physicians and patients is a key factor in compliance for glaucoma patients. Specifically, patients would like their physicians to teach them how to instill their eye drops, tell them about new/alternate medications and procedures as they become available, and offer new ways to make their regimen easier. Patients often do not tell

their physician if they experience a side effect unless it is intolerable to them, yet they do realize the seriousness of glaucoma, and the consequences of not following their doctor's orders. Finally, while cost was not a reported deterrent to compliance, some patients would prefer less expensive alternatives.

97. Trewin, V. F. and Veitch, G. B. Patient sources of drug information and attitudes to their provision: a corticosteroid model. *Pharm World Sci.* 2003 Oct; 25(5):191-6.
Keywords: *Access to Information/ Adolescent/ Adrenal Cortex Hormones: *therapeutic use/ Adult/ Aged/ Attitude/ Counseling/ Data Collection/ *Drug Therapy/ Female/ Great Britain/ Humans/ Inpatients/ Male/ Middle Aged/ Nurses/ Patient Compliance/ *Patient Education/ Pharmacists/ Physicians/ Questionnaires
Abstract: AIM: To determine patient's preferred sources of drug information and their attitudes to how this is provided. DESIGN: A quantitative evaluation via personal interviews using a formal questionnaire. SUBJECT AND SETTINGS: A group of 101 in-patients in a chest ward at the Royal Devon & Exeter Healthcare NHS Trust. OUTCOME MEASURES: Preferred sources for medication advice; personal involvement in own treatment; adequacy of consultation period; medication compliance; post discharge sources of drug information; recalled benefits and side effects of corticosteroids. RESULTS: Preferred source of drug information was: doctor (35%), pharmacist (11%) and nurse 4%. Sixty percent of patients wanted to be involved in the choice of their medication, thirty-nine percent leaving it totally to the doctor and one patient who wanted the final word in what was prescribed. Sufficient discussion time with GPs was reported by 66% of patients (12%, insufficient) and 53% with hospital doctors (19%, insufficient). Non-compliance with medication was reported by 66% and compliance by 24%. Medication advice sources used when at home were; community pharmacists (22%), GPs/books & magazines/specialist societies (all 18%), nurses (10%) and others less than 8%. Benefits of corticosteroids recalled by patients were: 'improving breathing' (14), 'general improvement' (9) and 'improved mobility'/'greater appetite' (both 5) with little change' reported by 13. Knowledge of side effects was much more comprehensive with; oedema/weight gain (50), skin/hair problems (33), osteoporosis (33), bruising (12) and mood changes (10) most commonly featured in responses. Almost all patients confirmed they liked to be given printed information about their medication. CONCLUSION: Patients sought their medication advice from a variety of sources and armed with this almost two thirds of patients wished to exercise their rights to be involved with their treatment planning. Sufficient discussion time appeared to be available to about half of the interviewees though only a few understood the intended benefits of prescribed corticosteroids used as an example in this work. A much better knowledge of drug side effects might have partly explained the high level of declared non-compliance. Although pharmacists featured as the preferred source of drug information for some patients, a much more detailed investigation is needed of patients' attitudes to the profession and to individuals' consultation and communication skills.
98. Tsai, J. C.; McClure, C. A.; Ramos, S. E.; Schlundt, D. G., and Pichert, J. W. Compliance barriers in glaucoma: a systematic classification. *J Glaucoma.* 2003 Oct; 12(5):393-8.

Keywords: Adult/ Aged/ Aged, 80 and over/ Antihypertensive Agents: *therapeutic use/ Cluster Analysis/ Female/ Glaucoma: *drug therapy/ Humans/ Male/ Middle Aged/ Patient Compliance: *statistics & numerical data/ Prospective Studies/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S.

Abstract: PURPOSE: To systematically identify and describe common obstacles to medication adherence (i.e., compliance) for patients with glaucoma. METHODS: A prospective case series of structured interviews were conducted with 48 patients with glaucoma. The subjects' responses were recorded verbatim on interview forms as well as recorded on audiotapes. Situational obstacles to medication adherence were elicited. Using hierarchical cluster analysis, the situational descriptions were stratified, grouped, and analyzed by frequency distribution. RESULTS: Seventy-one unique situational obstacles were reported. These were then grouped into 4 defined and separate categories: situational/environmental factors (35 of 71 situations; 49%), medication regimen (23 of 71; 32%), patient factors (11 of 71; 16%), and provider factors (2 of 71; 3%). CONCLUSION: Significant barriers to compliance exist for patients with glaucoma in addition to those cited by previous ophthalmic studies. A systematic classification (i.e., taxonomy) of these barriers was formulated to assist in optimizing patient education and problem-solving regarding prescribed therapeutic regimens.

99. van der Wal, M. H.; Jaarsma, T., and van Veldhuisen, D. J. Non-compliance in patients with heart failure; how can we manage it? *Eur J Heart Fail.* 2005 Jan; 7(1):5-17.
Keywords: Adult/ Directive Counseling/ Food Habits/ Heart Failure, Congestive: *psychology: *therapy/ Humans/ Life Style/ Patient Education/ Research Support, Non-U.S. Gov't/ Risk Reduction Behavior/ *Treatment Refusal
Abstract: BACKGROUND: Because of the improvement of the pharmacological and non-pharmacological treatment in heart failure (HF) patients, the HF related therapeutic regimen is becoming more complicated. Non-compliance with this regimen can result in worsening HF symptoms, sometimes leading to hospitalisation. AIMS: The aims of this systematic literature review are (1) to describe the consequences of non-compliance in HF patients; (2) to summarise the degree of compliance in the various aspects of the therapeutic regimen; and (3) to review interventions that are recommended to improve compliance in HF patients. METHODS: A literature search of the MEDLINE and CINAHL database from 1988 to June 2003 was performed. Studies on compliance with life style recommendations according to the HF Guidelines of the European Society of Cardiology and the American Heart Association/American College of Cardiology were included. CONCLUSION: Non-compliance with medication and other lifestyle recommendations is a major problem in patients with HF. Evidence based interventions to improve compliance in patients with HF are scarce. Interventions that can increase compliance and prevent HF related readmissions in order to improve the quality of life of patients with HF need to be developed and tested.
100. Vergara, C.; Martin, A. M.; Wang, F., and Horowitz, S. Awareness about factors that affect the management of hypertension in Puerto Rican patients. *Conn Med.* 2004 May; 68(5):269-76.
Keywords: Adult/ Aged/ Aged, 80 and over/ *Awareness/ Connecticut/ Delivery of

Health Care/ Female/ *Health Knowledge, Attitudes, Practice/ Hispanic Americans: education: *psychology/ Humans/ Hypertension: *ethnology: psychology/ Interviews/ Male/ Middle Aged/ Outpatient Clinics, Hospital: *utilization/ Patient Acceptance of Health Care: *ethnology/ Puerto Rico: ethnology/ Questionnaires/ United States: epidemiology

Abstract: INTRODUCTION: There are few published reports describing the health status of Hispanic populations in the United States with chronic illnesses, such as hypertension. Most studies on hypertension in Hispanics are on Mexican-Americans and little data exist for other Hispanic subgroups, such as Puerto Ricans. Health-related issues specific to a particular Hispanic subgroup may not be generalizable to all Hispanics. Patients' perceptions and awareness of health-related issues specific to a particular medical condition play an important role in the management and outcome. OBJECTIVE: The primary objective of the study is to determine if patients' general perceptions of hypertension, hypertension-related risk factors, complications, and life-style behavior modifications correlated with various patient demographics, such as age, gender, primary language, education level, socioeconomic status, marital status, health insurance category, and employment status. The working hypothesis is that patients who are older, unmarried, less educated, Spanish-speaking only, unemployed, and have low income, are more likely to report lack of awareness to various hypertension-related issues. SETTING: Hospital-based ambulatory center with major emphasis on providing care to underserved populations of the surrounding community, of which Puerto Ricans comprised the predominant ethnic group. STUDY DESIGN: A single, bilingual interviewer administered a series of questions to Hispanic, hypertensive patients. Questions were divided into the following seven categories: patient knowledge and perception of the disease; diet and salt intake; tobacco use; alcohol use; weight control and exercise; and medication and alternative therapy use. Within each category were various questions designed to study the patients' knowledge of hypertension, self-reported compliance with behavior modifications, and patient education on these behaviors. Data from 19 Puerto Rican patients were collected and chi-square tests and pothoc power analyses were performed. Responses to the various questions were correlated to patient demographics and socioeconomic variables. RESULTS: Use of herbal teas correlated significantly with the patients' primary language. Twenty-one percent of the patients who spoke Spanish only used herbal teas for treatment of their hypertension. All patients who reported herbal medication or tea use had a middle school education. There were many trends towards statistical significance in the following categories: patient perceptions and level of formal education; patient knowledge of hypertension and language spoken; salt intake and years of schooling; and correlation of herbal use with employment status, health insurance statu, and age. CONCLUSION: Additional research must be undertaken with larger sample sizes to give validity and statistical significance to the observed findings. This study and previous research, demonstrate some of the special issues that may need to be considered in the delivery of health care to specific Hispanic patient populations.

101. Viswanathan, H.; Anderson, R., and Thomas, J. 3rd. Evaluation of an antiretroviral medication attitude scale and relationships between medication attitudes and

medication nonadherence. *AIDS Patient Care STDS*. 2005 May; 19(5):306-16.
Keywords: Adolescent/ Adult/ Aged/ Anti-HIV Agents: *therapeutic use/ Cross-Sectional Studies/ Female/ HIV Infections: *drug therapy/ Humans/ Indiana: epidemiology/ Male/ Middle Aged/ Patient Compliance: *statistics & numerical data/ Research Support, Non-U.S. Gov't/ Self Administration: *psychology: utilization/ Treatment Refusal: *psychology

Abstract: The objectives of this study were to refine a scale designed to assess attitudes toward antiretroviral medication, to examine variation in medication attitudes across clinical and demographic characteristics, and to assess relationships between medication attitudes and medication nonadherence. A cross-sectional design was used to survey individuals at least 18 years of age, currently on antiretroviral therapy, and served by a regional HIV/AIDS center. The survey was administered by pharmacy students using convenience sampling between February 2002 and August 2002. Nonadherence was measured using a nine-item scale with a higher score indicative of higher nonadherence. An antiretroviral medication attitude scale was developed based on revision of a zidovudine attitude inventory. The sample of 99 patients was predominantly male (79.8%), had an annual income of less than \$10,000 (74%), and was comprised of 50% whites and 40.8% blacks. Participants were between 18 and 70 years old. Item reduction using item-total correlations and factor analytic techniques resulted in a 15-item medication attitude scale with good internal consistency (Cronbach alpha coefficient = 0.84). A multiple regression model showed a significant negative relationship between attitude toward medication and medication nonadherence after controlling for covariates including age, education, gender, ethnicity, work status, social support, CD4 cell count and number of antiretroviral medications, suggesting that more positive the attitude toward medication, lower the medication nonadherence. Findings underscore the importance of attitude toward medication as a modifiable factor that can be targeted to improve medication adherence.

102. Weiss, L.; French, T.; Finkelstein, R.; Waters, M.; Mukherjee, R., and Agins, B. HIV-related knowledge and adherence to HAART. *AIDS Care*. 2003 Oct; 15(5):673-9.
Keywords: Adolescent/ Adult/ Antiretroviral Therapy, Highly Active: *psychology/ Female/ HIV Infections: *drug therapy: psychology/ Health Knowledge, Attitudes, Practice/ Humans/ Male/ Middle Aged/ Patient Compliance: *psychology/ Patient Education/ Questionnaires/ Research Support, Non-U.S. Gov't/ Research Support, U.S. Gov't, P.H.S./ Risk Factors
- Abstract: Near perfect adherence is considered essential for patients on HAART, yet adherence to medical recommendations is rarely so high. Supportive services and reminder tools may help individuals to become adherent, yet it is difficult to determine who may need such interventions. In this study, based on data from the NYSDOH/AIDS Institute Treatment Adherence Demonstration Program, we look at the association between HIV-related knowledge and adherence, hypothesizing that a better understanding of HIV and its treatment is associated with better adherence. In analyses based on 997 participants, knowledge, as measured by five true/false questions, was significantly associated with self-reported adherence. In multivariate analysis, compared to persons with four or five items answered correctly, persons with fewer

correct answers were more likely to report missed doses (OR = 1.72 for 2-3 correct, $p < 0.01$; OR = 2.92 for 0-1 correct, $p < 0.05$). Our data suggest that providers should include questions focused on knowledge of HIV in their assessments of medication readiness and need for adherence support. Similarly, providers should be diligent with respect to patient education, ensuring that each patient has the information needed to support reasoned decision making and adequate adherence.

103. Weitbrecht, W. U. and Vosskamper, C. [Influence of the drug package information paper on compliance of neurological and psychiatric outpatients]. *Fortschr Neurol Psychiatr.* 2002 Apr; 70(4):178-84.
Keywords: Adult/ Aged/ *Drug Labeling/ Education/ English Abstract/ Female/ Humans/ Male/ Mental Disorders: *drug therapy/ Middle Aged/ Nervous System Diseases: *drug therapy/ Outpatients/ *Patient Compliance/ Physicians/ Prescriptions, Drug/ Questionnaires
Abstract: The influence of demographic parameter, the number of different drugs or the frequency of the single doses on the reliability of compliance was subject in different studies. The goal of this investigation was to examine the influence of the drug package information paper on the compliance of neurological-psychiatric patients. 951 patients of one quarter of a neurological-psychiatric practice were given a questionnaire, which examined the income behavior and the estimate of the meaning of the drug package information paper. 352 patients answered the questionnaires. Only 15.6 % refused it to answer the questionnaire. The remaining were not able to answer because of different reasons (dementia, aphasia, acute psychiatric disorders, foreign language origin, immobility, etc.). 98.1 % considered the drug package information paper to be important. Older patients and patients with lower education degree judged the drug package information paper to be too extensive. Only few patients (11.5 %) let the physician explain the drug package information paper. 86.3 % of the patients assumed the medication prescribed by the physician to be correct. 58.1 % of the patients however were not satisfied with the information by the physician. Patients with neuroses were particularly dissatisfied over the clearing-up by the physician (77.3 %). 73.3 % of the patients were deterred from taking in their medicines occasionally or frequently by the side effects described in the drug package information paper. 59.9 % of the patients would take the medicine, if the physician insisted on it. Independently of the influence of the drug package information paper 57.5 % of the patients forgot to take their medicines occasionally or frequently. Patients with epilepsies and M. Parkinson were most compliant. In summary the investigation showed that the clearing-up only by the drug package information paper in contrast to the clearing-up by the physician leads to more non-compliance.
104. Wong, C. C.; Mouanoutoua, V.; Chen, M. J.; Gray, K., and Tseng, W. Adherence with hypertension care among Hmong Americans. *J Community Health Nurs.* 2005 Fall; 22(3):143-56.
Keywords: Adult/ Aged/ Aged, 80 and over/ Asian Americans: *statistics & numerical data/ Blood Pressure Determination: statistics & numerical data/ California: epidemiology/ Female/ Health Knowledge, Attitudes, Practice/ Health Status/ Humans/ Hypertension: diagnosis: *therapy/ Logistic Models/ Male/ Middle Aged/ Odds Ratio/

Patient Compliance: *ethnology/ Socioeconomic Factors

Abstract: To assess contexts of adherence with hypertension care among Hmong Americans, in-person interviews were conducted with a convenience sample of 323 adults using culturally adapted survey instruments. The mean age of participants was 58 years; 91% had no education, and 86% spoke no English. Although more than 90% had health insurance and were treated with medications, the rate of blood pressure control was low (27%). A majority (> 90%) suffered from psychological distress, and 46% lived with physical illness. Over 50% reported nonadherence with hypertension care. Respondents who were 50 years of age or older, had no physical illness, did not know that hypertension was preventable, or believed that American medicine was too strong, were more likely to report nonadherence with proper medication consumption. Findings suggest that adherence was not due to lack of health care coverage; instead, it may be due to gaps in health services.

105. Wong, M.; Haswell-Elkins, M.; Tamwoy, E.; McDermott, R., and d'Abbs, P. Perspectives on clinic attendance, medication and foot-care among people with diabetes in the Torres Strait Islands and Northern Peninsula Area. *Aust J Rural Health*. 2005 Jun; 13(3):172-7.
- Keywords: Adult/ Aged/ Ambulatory Care Facilities: utilization/ Amputation: statistics & numerical data/ Diabetes Mellitus, Type 2: *ethnology: *therapy/ Diabetic Foot: ethnology: prevention & control/ Female/ Focus Groups/ Health Care Surveys/ *Health Knowledge, Attitudes, Practice/ Health Services, Indigenous: *utilization/ Humans/ Interviews/ Male/ Middle Aged/ Oceanic Ancestry Group: *statistics & numerical data/ Patient Acceptance of Health Care: *ethnology/ Patient Compliance: ethnology/ Podiatry: statistics & numerical data/ Queensland: epidemiology/ Research Support, Non-U.S. Gov't/ Rural Health Services: utilization
- Abstract: OBJECTIVE: To achieve a better understanding of the perspectives and needs of Indigenous people with diabetes in the Torres Strait and to identify ways to promote successful self-management of diabetes. DESIGN: Descriptive study collecting qualitative data in focus groups and in-depth interviews. Analysis of three key areas of diabetes self-care, namely attending appointments at the clinic, monitoring blood glucose levels and taking medication and foot-care. SETTING: Informal settings in remote communities of the Torres Strait and Northern Peninsula Area of Far North Queensland. SUBJECTS: Sixty-seven Torres Strait Islanders (26 men and 41 women) with diabetes from eight Torres Strait and Northern Peninsula Area communities. MAIN OUTCOME MEASURES: A better understanding of the views, enabling factors and barriers that people experience when managing their diabetes in remote Torres Strait communities. RESULTS: Participants who expressed satisfaction with clinical-initiated sessions when called highlighted positive relationships and encouraging feedback from doctors. People's attitudes and practices related to oral and injectable treatments varied widely, possibly linked to levels of understanding. Widespread knowledge of foot-care and fear of amputation in an environment highly conducive to foot sores and infection was evident. Generally, participants wanted more education and personal support in all areas of diabetes care. Service providers in health and other sectors need to place more emphasis on supporting self-management of diabetes within the family and community environment.

106. Yilmaz, M. B.; Biyikoglu, S. F.; Guray, Y.; Karabal, O.; Caldir, V.; Cay, S.; Sahin, O.; Sasmaz, H., and Korkmaz, S. Level of awareness of on-treatment patients about prescribed statins. *Cardiovasc Drugs Ther.* 2004 Sep; 18(5):399-404.
Keywords: Adult/ *Awareness/ Female/ Humans/ Hydroxymethylglutaryl-CoA Reductase Inhibitors: *therapeutic use/ Male/ Middle Aged/ *Patient Compliance/ Patient Education/ Questionnaires
Abstract: BACKGROUND: Statins are frequently prescribed drugs for patients with coronary heart disease according to evidence-based medicine. However, compliance with these agents has still been far from ideal, since they require long term, probably life long therapy. We conducted a survey on patients who were already on statin treatment and evaluated their level of awareness of prescribed statins. METHODS: 236 participants (117 male, 119 female), who had been on treatment with statins for at least three months, were enrolled in our study after giving informed consent. Patients were asked close-ended survey questions. RESULTS: Only 5.5% of participants were on statin treatment for primary prevention, and 16.1% of them had a CHD equivalent, defined as those with clinical manifestations of noncoronary forms of atherosclerotic disease (peripheral arterial disease, abdominal aortic aneurysm, carotid artery disease) and diabetes mellitus. Most participants (70%) stated that they had been using statins to decrease cholesterol, whereas 16.5% stated that they had no idea. More than half of the participants (58%) stated that they did not know how long they would have to keep using their statins, whereas 21% replied that they would use them continuously. One fifth of participants had some idea about side effects. Participants in whom statin therapy was started during hospitalisation for coronary angiography and/or PCI more frequently answered that statins should be used continuously (49% vs. 12% not hospitalised, $p < 0.01$). Also, therapy adjustment by the physician led to a better understanding of the need for continuous use (55% vs. 31% without medication change, $p < 0.001$), as was the case for patients with < 2 co-medications (36% vs. 17% with > 2 co-medications, $p 0.002$). Presence of other risk factors did not have any impact on level of awareness. CONCLUSION: Comprehensive information at initial prescription, initiation of statins during hospitalization, dose adjustment during follow up, and as little co-medication as possible seem to increase the level of awareness of the benefits of long-term statin treatment. This might result in better compliance rates.
107. Youssef, R. M. and Moubarak, I. I. Patterns and determinants of treatment compliance among hypertensive patients. *East Mediterr Health J.* 2002 Jul-2002 Sep 30; 8(4-5):579-92.
Keywords: Adult/ Aged/ Aged, 80 and over/ Antihypertensive Agents: classification: therapeutic use/ Dietary Fats: adverse effects/ Egypt/ Female/ Health Behavior/ *Health Knowledge, Attitudes, Practice/ Humans/ Hypertension: etiology: *psychology: *therapy/ Life Style/ Logistic Models/ Male/ Middle Aged/ Models, Psychological/ Obesity: complications: prevention & control/ Patient Compliance: *psychology: statistics & numerical data/ Patient Education/ Questionnaires/ Risk Factors/ Risk Reduction Behavior/ Smoking: adverse effects: prevention & control/ Socioeconomic Factors/ Sodium Chloride, Dietary: adverse effects
Abstract: Logistic regression analysis was used to identify predictors of pharmacological and lifestyle compliance among hypertensive patients. Patients

attending health insurance clinics for prescription refills were randomly selected and interviewed (n = 316). Blood pressure was controlled for 53.2% of patients but 25.9% were non-compliant with medication. Common barriers to compliance were: feelings of normal blood pressure, forgetfulness, drug holidays and drug side-effects. Patients were non-compliant with smoking cessation (43.6%), weight reduction (59.3%), and dietary salt (22.4%) and fat restriction (26.5%). Misconceptions about smoking cessation and costs of preparing special dishes were common. Independent predictors of compliance were: controlled blood pressure, diet modification, drug side-effects, and perceptions of management benefits and susceptibility to related complications.

108. Zanieri, G.; Buizza, C.; Ravelli, L.; Bignotti, S.; Porteri, C.; Pioli, R., and Saltini, A. [Psychopharmacological treatment: patients' knowledge about their medication]. *Recenti Prog Med.* 2003 Sep; 94(9):387-90.
Keywords: Adult/ Comparative Study/ Education/ English Abstract/ Female/ *Health Knowledge, Attitudes, Practice/ Humans/ Male/ Mental Disorders: *drug therapy/ Middle Aged/ Mood Disorders: drug therapy/ *Patient Compliance/ Patient Education/ Personality Disorders: drug therapy/ Psychotic Disorders: drug therapy/ Psychotropic Drugs: administration & dosage: *therapeutic use/ Schizophrenia: drug therapy
Abstract: AIMS: To identify knowledge about medication in a sample of patients admitted in a residential psychiatric rehabilitation unit. METHODS: All consecutive patients admitted in a psychiatric rehabilitation unit during January 2000-April 2001 were interviewed about the medications prescribed; in particular they were asked about names, daily dose, therapeutic and side effects of the psychotropic drugs they took. RESULTS: 74 patients were surveyed about their knowledge of the psychopharmacological treatment they took. Most patients demonstrated a good knowledge about drugs' name (77%) and daily dose (74.3%); one-quarter (25.7%) had some understanding about the reason why the medications were prescribed and their intended effects while only 5.4% was able to indicate the side effects of medications prescribed. Overall, 21.6% of patients could correctly indicate drugs' name, daily dose and therapeutic effects of all medications they took. CONCLUSIONS: The results of our study indicate the importance in clinical practice to devote particular attention to the patients' understanding of provided information about treatment and the crucial role of strategies, aimed at improving compliance and maximize the effects of therapeutic interventions.
109. Zhao, X.; Furber, S., and Bauman, A. Asthma knowledge and medication compliance among parents of asthmatic children in Nanjing, China. *J Asthma.* 2002 Dec; 39(8):743-7.
Keywords: Adult/ Asthma: *psychology/ China: epidemiology/ Humans/ *Knowledge/ Parent-Child Relations/ Parents: education: *psychology/ Patient Compliance: *psychology/ Questionnaires/ Socioeconomic Factors
Abstract: Asthma knowledge and medication compliance among parents of 150 asthmatic children in Nanjing were assessed using a self-administered questionnaire. The results showed that 54.7% of parents had poor knowledge of asthma and its management. Parental compliance with medication was also suboptimal as only 43.3% of parents reported adherence with prescribed anti-asthmatic medication for their

children. Reasons for non-compliance included fear of medication side-effects and tolerance, and forgetting to give the child's medication. Education and occupation were found to be associated with asthma knowledge, however there was no association between age or income with knowledge. Income was associated with compliance with asthma medication, however no association was found between parents' age, education, occupation, or asthma knowledge with compliance. This study has identified the need for accurate and up-to-date information on asthma for parents of asthmatic children as well as programs aimed at teaching parents skills in managing their child's asthma. There is also the need for strategies aimed at improving communication between the health provider and parents of asthmatic children.

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