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International Series: Adherence

Adherence to treatment: what is done in Sweden? Practice, education and research

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ABSTRACT*

Objective: The objective of this review was to identify the practice, education and research of pharmacists in Sweden in regard to adherence to treatment.

Methods: Medline was searched up to the end of February 2008. In addition to the Medline search performed, other available sources were also used to identify relevant articles.

Results: No adherence-specific programs have been implemented in Swedish pharmacies. No adherence-specific courses are provided in Swedish Universities educating pharmacists. The adherence-related research has so far mainly focused on refill non-adherence, primary non-adherence and patient reported non-adherence and readiness to treatment.

Conclusions: Adherence-related practice and education of pharmacists will probably change due to the deregulation of the pharmacy market that will take place in the near future in Sweden. Research on adherence will need to be strengthened in the sense that it has so far not been guided by adherence-related theoretical frameworks, despite the fact that there are several theories to hand that try to explain adherence.

Keywords: Patient compliance. Pharmacists. Sweden.

ADHERENCIA AL TRATAMIENTO: QUE SE ESTÁ HACIENDO EN SUECIA? PRACTICA, EDUCACIÓN E INVESTIGACIÓN

RESUMEN

Objetivo: El objetivo de esta revisión fue identificar la práctica, educación e investigación de los farmacéuticos en Suecia en relación a la adherencia al tratamiento.

Métodos: Se buscó en Medline a finales de febrero de 2008. Además de la búsqueda en Medline, se utilizaron otras fuentes disponibles para identificar artículos relevantes.

Resultados: No se han implantado programas específicos de adherencia en las farmacias suecas. No se han proporcionado cursos específicos en las universidades suecas para educar a los farmacéuticos. La investigación relacionada con adherencia ha estado fundamentalmente centrada en no cumplimiento de las repeticiones de medicamentos, no cumplimiento primario y incumplimiento comunicado por el paciente y disponibilidad al tratamiento.

Conclusiones: La práctica y la educación de farmacéuticos relacionadas con la adherencia probablemente cambien debido a la desregulación del mercado farmacéutico que tendrá lugar en Suecia en un futuro cercano. La investigación en adherencia necesitará ser reforzada ya que no se ha basado en marcos teóricos de adherencia cumplimiento, a pesar de que existen varias las teorías que intentan explicar el incumplimiento.

Palabras clave: Cumplimiento del paciente. Farmacéuticos. Suecia.

INTRODUCTION

The term compliance was first used within a medical context in 1976[1] and the most cited definition of compliance is; "the extent to which a person's behaviour (in terms of taking medications, following diets or executing lifestyle changes) coincides with medical or health advice".[2] In recent literature the term compliance has been replaced by the term adherence, as compliance represents an authoritarian way of looking at how patients and health care personnel decide on actions and behaviours[3] where the patient has a passive approach toward health care.[4] The definition of adherence is; "the extent to which a person's behaviour – taking medication, following a diet,

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and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider".[5] These two terms are still, however, used interchangeably in research although they have different definitions.[4] A third term used in this area is concordance, which was introduced in 1997.[6] Concordance underscores the need for shared decision making between doctor and patient and hence the patient should be even more involved in the decision-making compared to adherence and compliance. The assumption is that good concordance has a positive impact on adherence to treatment.[6]

Compliance and adherence can further be divided into dose, timing and food restriction compliance/adherence. Dose compliance is focusing on the doses missed, timing compliance is the extent to which the patient is following the prescribed dosing schedule and food restriction compliance is whether the patient takes the drugs according to prescribed food restrictions. Primary non-compliance is another aspect of adherence research that has been defined as: "any prescription issued to a patient for which no medication is received".[7]

Sub-optimal adherence to treatment is a health problem worldwide and results in poor treatment outcomes, decreased quality of life and increased costs for health care.[5] Adherence to treatment for chronic diseases in particular has been reported to be low and the number of doses taken as prescribed averages only 50%.[5] Hence there is room for improvements.

The pharmaceutical profession (i.e. community pharmacists and hospital pharmacists) is one of the professions that has been considered able to improve adherence among patients.

In Sweden all pharmacies are owned by the National Corporation of Swedish Pharmacies (Apoteket AB). Three main professional categories are present in the Swedish pharmacies, namely; pharmacists who have 4-5 years of university education, dispensing pharmacists with 2-3 years of university education and pharmacy technicians who have a 2 year long occupational education at upper secondary school level. Dispensing pharmacist is an academic degree only available in Sweden, Finland and Norway. All three categories of personnel are involved in patient counselling but only pharmacists and dispensing pharmacists may dispense prescription drugs.

Internationally there has been substantial research done by community and hospital pharmacists regarding adherence and the interest in this topic/research area continues to grow in Sweden.

The aim of this review was to identify the practice, education and research of pharmacists in Sweden in regard to adherence to treatment.

METHODS

Apoteket AB was contacted in order to understand the current practice of pharmacists regarding adherence to treatment. The universities providing education to pharmacists and dispensing pharmacists were also contacted in order to understand the pharmacist education in Sweden. Articles regarding adherence research were identified through searches conducted on Medline using the following MESH headings: Patient compliance, Pharmacist and Sweden. The same terms were also used in a regular Medline search as well as the term adherence. Medline was searched for articles published from 1966 until the end of February 2008. Reference lists in the articles identified were also searched for relevant articles. Apoteket AB´s list of scientific articles published by their employees was also obtained and searched. As a last step in the search procedure a special interest group at the Royal Swedish Pharmaceutical Association consisting of researchers interested in research regarding drug use were also contacted and asked to share their adherence-related work as well as other work conducted by Swedish pharmacists they were familiar with.

RESULTS

Adherence and pharmacy practice

National policies related to medication non-adherence

There are no national policies related to medication non-adherence in Sweden. There has, however, been an initiative to increase the awareness of adherence, its implications for treatment and to promote multidisciplinary teamwork between doctors, pharmacists and nurses. The project was initiated by different organizations within the medical, pharmaceutical and nursing fields. The group working on the project (one physician, one pharmacist and one nurse) had financing for a three year period and the project started in 2003. The project resulted in three Swedish reports.[8-10] The first report was a review of the current literature and suggested goals for the three professions in order to improve concordance. The second report focused on how to implement these three suggested goals in practice. The third report summarized the progress of the group in their efforts for concordance. The project was also described in an international article.[11] After the funds for the project ended the project was also discontinued.

The role of community and/or hospital pharmacists in adherence activities.

No adherence activities have been conducted by Apoteket AB. There have, however, been programs with the aim of improving drug use in general but without specific adherence interventions. There have been annual theme campaigns with the aim of increasing the knowledge of a specific disease and to facilitate correct drug use.[12] There has also been a lot of focus on the identification, resolution, prevention and documentation of drug-related problems (DRPs) over the last years.[12-17] Some DRPs can influence adherence negatively. Since 2001 DRPs have been documented in Apoteket AB´s software program and in 2004 a national database for DRPs was started.[18] Patient medication profiles have been gradually introduced

since 2002.[18] One of the aims of the profiles has been to improve adherence. One program was recently discontinued by Apoteket AB where patients were offered in-depth counselling by a pharmacist in addition to their patient medication profile. Patient medication profiles are still available in some pharmacies in Sweden but without the in-depth counselling by a pharmacist. Detailed information regarding the project has been provided by Montgomery et al.[19]

Several projects regarding interdisciplinary collaboration involving pharmacists have been reported in the international literature.[20-24] One of these projects had the aim of increasing the level of adherence.[20] A satellite pharmacy was introduced at the HIV clinic at Karolinska University hospital Huddinge.[20] The satellite pharmacy was found to form a base for pharmaceutical care. Although there was room for improvement, the satellite pharmacy was found to be valuable by health care personnel and was believed to increase the level of adherence. The approach led to increased communication and trust between the health care professionals which, in turn, led to an increase in teamwork in medicines management. In this way the satellite pharmacy was an example of seamless care, as it bridged the gap between the HIV clinic and the community pharmacy.

Pharmacist education and adherence related education

Only one University has historically been educating pharmacists and dispensing pharmacists, but during the last decade this has changed (Table 1). Today several Swedish Universities are educating pharmacists and dispensing pharmacists. Since then, the number of pharmacist students starting their education has doubled and the number of dispensing pharmacists has tripled.[25] The education regarding adherence is scarce and there are no specific courses devoted to adherence.

Post graduate courses regarding adherence are not available. Three pharmacists have, however, defended their theses where adherence has been the main objective or one of several objectives (results from this research has been described in more detail below).[26-28] One thesis regarding DRPs has also been defended.[29]

Table 1. Adherence education at the different universities educating pharmacists and dispensing pharmacists

	Pharmacists		Dispensing pharmacists	
	n per year	Adherence education	n per year	Adherence education
Uppsala University	180	No specific course*	120	No specific course*
Gothenburg University	90	No specific course*	40	No specific course*
Umeå University	-**	-	50	No specific course*
Karlstad University	-**	-	About 20	No specific course*
University of Kalmar	-**	-	30 per year	No specific course*

* Adherence is discussed throughout the courses but no specific course is available
** These Universities only provide education to dispensing pharmacists.

Adherence research

Primary non-adherence

Several studies evaluating primary non-adherence have been published. Primary non-adherence seems to be low in Sweden and ranges from 1.5%[30] to 2.4%.[31] Primary non-adherence has been found to be influenced by age, gender and type of drugs prescribed.[32] One reason for primary non-adherence has been suggested to be that patients feel that there is no need for the drug; however, 28% of interviewed patients were not aware that a prescription was issued and sent to the pharmacy.[31] One intervention to decrease the primary non-adherence has been tested by Ekedahl et al.[33] They investigated the impact of postal and telephone reminders on pick-up rates of unclaimed e-prescriptions. E-prescriptions can in Sweden be prescribed either directly from the prescriber's electronic medical chart system or from a webpage on the Internet, and the prescriptions are then sent to the pharmacies instantly. The reminders had no statistically significant effect on the pick-up rates of e-prescriptions.

Refill non-adherence

Krigsman and colleagues have described refill adherence in Sweden regarding long-term medication in general and specifically to asthma/COPD, diabetes and cancer drugs.[34-40]

Rate of satisfactory refill adherence (i. e. 80-120% of the prescribed doses) was 57% for repeat prescriptions (n = 2058) with long-term drug treatment in general; undersupply occurred with 21% (n = 762) and oversupply in 22% of cases (n = 816).[34] Patients for whom the drugs were free of charge (i. e. they had paid 1800 SEK (190 Euro) for drugs and after that drugs are free for the remaining year) had significantly higher oversupply than other patients.[35] The overall cost for oversupply was 32000 SEK (3500 Euro) higher for patients who received drugs free of charge than those you did not. The authors extrapolated these data to the Swedish population, and found that the overall cost of oversupply was 142 million SEK (15 million Euro) per year.[35]

The level of satisfactory refill adherence for repeat prescriptions dispensed for asthma/COPD specifically was lower with an average of 30%. For the elderly, undersupply was more common than oversupply.[36] In another study, Haupt et al found that asthma/COPD drugs were acquired less than once a year for 51% of the patients and the proportion was even higher in younger age groups.[40]

Krigsman et al also evaluated different ways of measuring refill non-adherence.[27] They used a pharmacy record database where data regarding individual prescriptions were automatically stored and compared these results with what was found when manually collecting repeat prescriptions (i. e. repeat prescriptions dispensed at a pharmacy were photocopied and manually collected). Assessments of refill adherence during a one-year period gave the same results irrespective of the method used. Krigsman et al also found that patients with concomitant use of both diabetes and asthma/COPD drugs did not have the same dispensation pattern for both drug types.[37] The same research group also studied cancer drugs and found that patients on oral long-term cancer drugs had similar levels of non-adherence as patients with other diseases.[39]

Patient-reported non-adherence

Södergård et al have in two cross-sectional patient surveys in 1998 and 2002 investigated the level of adherence among Swedish patients infected with HIV.[41] The level of adherence improved from 28% in 1998 to 57% in 2002, possibly due to simplified treatment and a new multi-professional treatment model at the clinic. In a nation-wide, cross-sectional patient survey in 2003-2004, the proportion of adherent patients was 63%.[42]

In the same nation-wide, cross-sectional patient survey the factors found to positively influence adherence among patients infected with HIV were a good relationship with their health care professionals, not having problems with drugs or alcohol, being older and having a shorter time on current treatment and on treatment in total.[42]

DRPs

Adverse reactions, misunderstandings regarding dosing, uncertainty about the aim and duration of a therapy together with other problems in relation to medication taking (DRPs) might influence adherence. Westerlund et al found that patient uncertainty about the aim of the drug and therapy failure belonged to the most frequently identified DRPs.[14] Several patient groups were significantly over-represented and consumers of dermatological products were one example. The educational level of the pharmacy personnel and their commitment had significant effects on the DRP documentation rates.[16] Westerlund has also published several other studies related to DRPs.[13,15,17,43]

Other adherence-related research

A relatively new area has also started to be explored namely the area of readiness (i.e. according to a simplified definition, how ready patients are for a health related change such as starting a therapy), and a review of the existing readiness literature has been published.[44] To try to understand how the concepts of readiness and adherence are related, three different models were tested by structural equation modeling.[45] The hypothesized model included readiness and adherence as separate latent concepts. This model was found to support readiness as a distinct factor influencing adherence.[45] The on-going research suggests that there is a statistically significant relationship between readiness and adherence.[46]

Beliefs about medicines and the relationship with adherence have also been studied. A relationship between some beliefs and adherence among pharmacy clients have been reported.[47] Another study evaluated the differences between beliefs about medicines for pharmacy clients and pharmacy staff.[48] A significant difference between beliefs expressed by staff and clients was reported. The pharmacy clients expressed stronger beliefs about medicines as being something harmful and less favourable. The pharmacy staff on the other hand expressed a more positive attitude about medicines. Another difference was the pharmacy staff had a stronger concern about the over-use of medicines compared to the clients.[48]

Beckman-Gyllenstrand et al have in two publications investigated different aspects of medication management among elderly patients.[49,50] Understanding instructions, opening medicine containers, tablet swallowing are some examples of medication management according to the authors. The authors found that functions (such as mobility, hand function and vision) and activities of medication management (such as preparing a dose for administration and actual administration) were both separately correlated to patient adherence.[26]

DISCUSSION

The pharmacy system in Sweden has since 1971 consisted of a nationwide company owned by the government.[18] Apoteket AB has since then been the only pharmacy chain in Sweden but the government has now decided to deregulate the pharmacy market. From 1971 until now the community pharmacy initiatives have as a result all come from Apoteket AB. There has not been any focus on adherence-promoting interventions but Apoteket AB has promoted better health through projects with the aim of improving drug use. The research that has been done so far has to a limited extent been used by Apoteket AB to improve the services provided to customers. The project that has had the most impact on practice is the research by Westerlund et al[13-17] regarding DRPs since DRPs are currently being assessed in the company's community pharmacy software program. As Apoteket AB has owned all pharmacies in Sweden for over 30 years and has an agreement with the government to promote rational drug use[18] it is interesting to see that no nation-wide adherence-promoting activities have taken place. Some interesting projects have been discontinued by Apoteket AB such as a project where patients were offered in-depth counselling by a pharmacist in addition to their patient medication profile.[19] The reason for this decision was economical considerations as well as a lack of pharmacists at the pharmacies.

Presently, many universities are educating pharmacists and especially dispensing pharmacists. There is, however, no specific adherence education

provided but adherence is discussed during the courses. There are no post-graduate courses available but several adherence-related theses have been defended.[26-29] Several other theses with the aim to understand adherence have, however, been defended outside the pharmaceutical community mainly by doctors and nurses.[51-58] An interesting new recent development is a PhD-project aiming at increasing reflective thinking among pharmacy students during their internship. A first article has been published in this field by Wallman et al[59] denoting developments in the education of pharmacists in Sweden.

Since the field of pharmacy in Sweden should benefit from being more integrated in the health care system, i.e. working in closer collaboration with the doctors and nurses and other health care staff, there is a need to improve the education of pharmacists. For instance it would be valuable to have courses allowing for specialization in specific therapeutic areas such as HIV and diabetes. These courses would preferably be integrated into clinical training so the students would learn clinical practice rather than theoretical knowledge.

Research on adherence-related topics has been rather extensive. Research has been conducted both within Apoteket AB and at the universities. The research has so far mainly focused on primary non-adherence and refill adherence. Research focusing on primary non-adherence has found that as many as 28% of the patients that have not picked up their prescriptions were not aware that a prescription was issued.[31] Since reminders did not increase the pick-up rate[33] other interventions need to be tested. The area of refill non-adherence has been relatively well examined. Krigsman and colleagues have not only evaluated different methods for measuring refill non-adherence[38] but also focused on many different chronic diseases.[34-40] Adherence research based on patient reports has so far only used questionnaires although patient-reported adherence can be measured by interviews as well as through diaries. It would also be an advantage to have longitudinal studies instead of cross-sectional surveys. A small and new field is readiness that has been shown to influence adherence.[44-46] The advantage of readiness is that it might be an approach able to predict adherence. This is something that would be valuable in chronic diseases where strict adherence is necessary and is hence an area that needs further exploration.

The future

Due to a proposed deregulation of the Swedish pharmacy market during 2009 there is a great uncertainty regarding the future within Apoteket AB today. As all pharmacies in Sweden are owned by the government, parts of the pharmacies will now probably be sold out to other companies or individuals. How this will affect pharmacy practice remains uncertain today. The adherence-related practice will, however, probably change. The education of pharmacists will also have to change due to the same deregulation process. The research interest in reflective practice in internships will also hopefully influence education. Whether the universities will start specific adherence education remains to be seen. Research on adherence will need to be strengthened in the sense that it has so far not been guided by adherence-related theoretical frameworks. There are several available theories that try to explain adherence that can be used. Although there are different definitions for compliance, adherence and concordance these terms still seem to be used more or less interchangeably in the published research. Concordance is a different concept, focusing on the interaction between the health care professionals rather than a measurable behavioural outcome as in the case of compliance and adherence. The research that has been done so far has to a limited extent been used by Apoteket AB to improve the services provided to customers, besides the inclusion of DRPs in the community pharmacy software program.

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CONFLICT OF INTEREST

None declared.

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