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ORIGINAL RESEARCH

Compliance, adherence, concordance, empowerment, and self-management: five words to manifest a relational maladjustment in diabetes

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Background: The pathological reality of diabetes and the incidents in following the prescribed therapies have been considered and are still a serious and relevant problem in the health sector.

Objective: This review aims at highlighting the importance of clinical psychological phenomena that underlie the notion of therapies.

Methods: The review was conducted through search engines such as PubMed, Medline, Web of Science and Google Scholar. The articles related to compliance, adherence, concordance, empowerment and the self-management of diabetes were included, in order to highlight the possible similarities and differences that these terms bring with them in them management of diabetes.

Results: Starting from 252 initial publications, 101 articles were selected that highlighted the practical implications that each term has compared to the others.

Conclusion: The review can represent a bridge between the medical approach and clinical psychology, in which integration can suggest paths aiming at improving patients' existential conditions and adaptation.

Keywords: compliance, adherence, concordance, empowerment, self-management, diabetes

Introduction

The lack of phenomenological knowledge of the health professional of diabetes, both under the aspect of pharmacology and of physical health, often causes health professionals themselves to forget that the drug has aspects that exceed its biochemical efficacy. We cannot ignore the emotional significance that the patient gives to the drug, and the surplus value that the health professional gives to the therapeutic medium. In this review we will deal with the aspects of collaboration between health professionals and patients that can be seen as effective, or the various proposals by many other authors.[1–7]

The educational approach is not sufficient enough, since therapy has a stronger meaning than prescriptions, as suggested by literature.[8] This concept is limited to what the patient views as having an active role in their own self-management[9,10] or "adherence".[11–13] These terms derive from the Latin "adhaerentia", derivative of adhaerēre "to adhere", is to be attached, supported, and closed. The use of etymologies and metaphors express only a part of the adjustment processes of the subject. There is in fact a lack between clear instructions given to patients and unknown variables not sufficiently understood, together with low empathy.

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It is probably better to use the term "self-care"[14] to underline a sort of emotional relationship that is something more than an empathic act. The last cited author suggests an approach to this type of relationship, while suggesting seven behaviors. The same psychoanalyst Jung uses this metaphor: «the meeting of two personalities is like the contact between two chemical substances; if there is a reaction, both are transformed».[15]

The concept of transference and counter-transference has been emphasized by psychoanalysis. Several other orientations have foreseen further concepts, like Winnicott, who specialized in the field of play and Gestalt in the encounter between patient and therapist. All those theoretical fields, impose on phenomenology as a method of describing the dimension of the phenomenon and the attempt to reach therapeutic protocols that must be adopted to every singular patient. The intent of this research is to highlight the need to get in touch with the subjective experience, in order to improve the outcomes of treatment. The clinical approach ensures a greater likelihood of glycemic control, as proven by the fact that many changes in glycemic metabolism are dictated by the same efforts and styles of health care as Hayes et al[16] have taken into account. A frequent mistake made by clinicians is to confuse the prescription and general theoretical orientations of psychology with the subjectivity of a lifestyle. Therefore, there is a necessity to distinguish a prescription from the value that the individual patient attributes to it.

The analysis, although apparently complex and long, arises from the need to highlight the trend of past and current clinical approaches in scientific literature.

Methods

Search strategy

A review of the scientific literature was conducted in order to analyze the behaviors of adherence to the pharmacological treatments of diabetes. Research strategies have been used through the computer database of PubMed, Medline, Web of Science and Google Scholar; the searched keywords refer to the concepts of Compliance, Adherence, Empowerment, Concordance, and Self-Management.

During this phase, the various domains on which the article is focused on have been identified:

1. Definitions of the phenomena related to the adherence of pharmacological treatments for diabetes;
2. Intervention strategies and results obtained;
3. Analysis of current knowledge referring to the origin of non-adherence.

Eligibility

Based on the keywords searched, 252 articles were found, of which 101 selected on the basis of title and abstract. The 101 articles in the table allow us to observe the similarities and differences that characterize the studies that conceptually prefer a term like compliance rather than empowerment or the others to investigate the therapeutic adherence.

Results

Compliance

The meaning of compliance in medicine refers to the ability of an organ to distend in response to applied pressure. In physics, compliance refers to the property of a material undergoing elastic deformation or (of a gas) changing in volume when subjected to an applied force. In therapy, it means to agree with rules or standards. More specifically, the patient and the family's response to the prescription given.[103]

In 1997 it was hypothesized that it would be sufficient to reduce the frequency of the doses of the drug to achieve an improvement in compliance; but this practice included risks, as it depended on the therapeutic range of the drug itself.[77] Of course, that does not divert from the fact that a better compliance can be achieved by using simpler and less frequent dosage regimens to facilitate the correct intake of drugs.[19,30,33,35,39,40,48,51,52,59,61,92,99,102] It is also true that some studies[5,10,25,71,72,100,101] have shown that the patient's motivation to be more compliant with treatment also increases according to the efforts and confidence that the health care provider can transmit in reference to the guidelines to be followed by the patient. The high number of the authors cited underlines the strength of the "trust" element in adhesion to the treatment. Referring to childhood, it has been noted that the complexity related to the treatment of chronic diseases greatly complicates adherence to treatment.[44] In order to be able to effectively manage a chronic disease such as diabetes, it seems essential not only to establish a relationship of trust between the health professional and the patient, but also a "friendship".[73] There

Table 1 Summary table of classification of articles

Reference and year	Country/ location	Purpose	Results
Adolfsson et al (2004)[6]	Sweden	Understand what are, according to doctors and nurses, the possible advantages related to strengthening the empowerment process.	Doctors and nurses, through the strengthening of the empowerment process, have changed their role from experts to facilitators.
Aronson (2007)[17]	UK	Highlight the conceptual differences of "compliance", "adherence", "concordance".	Although "compliance" and "concordance" are sometimes useful, the author suggests that the term "adherence" is the most appropriate one. They pointed out that the standard methods recommended to improve adherence to therapy are often not sufficient to obtain an effective improvement.
Bailey and Kodack (2011)[18]	UK	The review highlights the reasons patients with type 2 diabetes have poor adherence.	The reasons for which there is often low adherence refer to several factors, including the lack of good communication and trust in doctor-patient relationships.
Bangalore et al (2007)[19]	USA	Understanding whether a simpler treatment regimen is able to improve compliance.	Applying a fixed dose combination should help achieve more satisfactory clinical outcomes.
Bell et al (2007)[20]	Finland	Clarify the conceptual differences between the terms "concordance", "compliance", "adherence".	Doctors should be able to develop a method that is more inclined to put the patient at the center of treatment, respecting his rights and building a solid therapeutic alliance.
Bissell et al (2004)[21]	UK	Examine the qualitative interviews of a group of Pakistani patients with type 2 diabetes.	The doctor-patient relationship should be used to coordinate the activities of the patients in order to achieve the desired results.
Bissonnette (2008)[22]	Canada	Understand how the terms of adherence, concordance and compliance differ.	There is no clear distinction between the terms taken into consideration. Adherence should both ensure a patient-centered medical approach, and suggest the inevitable difference in role that exists between the doctor and the patient.
Boccuzzi et al (2001)[1]	USA	Characterize the patterns of use of the drugs used by prescribers and by the patient.	Type 2 diabetes can be managed with different pharmacological modalities, it would be important to be able to find the one most capable of providing satisfactory results.
Bodenheimer et al (2002)[23]	USA	The patient-medical partnership is investigated,involving collaborative assistance and self-managed education.	The self-management education for chronic diseases could be extremely important for the treatment.
Bott et al (2000)[24]	Germany	Evaluate how a treatment that takes into account psychosocial dynamics may also be important for treating patients with type 1 diabetes mellitus.	Psychosocial aspects also positively influence glycemic control.
Brown (1999)[9]	USA	Understand, through a review of the literature, which are the best interventions for self-management of diabetes.	From the literature we note that educating self-management of diabetes allows for better health outcomes.

(*Continued*)

Table 1 (Continued).

Reference and year	Country/ location	Purpose	Results
Bruni et al (2009)[25]	Italy	Understanding whether financial incentives can affect the quality of care.	The results of the study argue that financial incentives can help improve the quality of care.
Brunton (2017)[26]	USA	Often, patients do not follow their management plans because of the doctors' attitude. Medicine has a history of paternalism and a top-down approach in patient care.	We need to take time to understand patients concerns and work with them to overcome the obstacles to their treatment. Collaboration with our patients will help us make important progress.
Burge (2001)[27]	Mexico	Since the factors that determine good compliance are not yet known, a study has been carried out to understand which strategies are most effective for good home monitoring.	Surely, adopting less painful methods to monitor diabetes could help improve compliance.
Buse et al (2009)[28]	USA UK Italy	Define a cure for diabetes.	It is difficult to find a single definition of treatment regarding diabetes.
Chan and Molassiotis (1999)[29]	Hong Kong	Understand how much awareness of diabetes affects good compliance.	No relationship between good awareness and good compliance emerged from the research.
Charpentier et al (2005)[30]	France	Compare compliance results with two different types of treatments.	The treatment that provided only one daily administration improved compliance compared to that which involved a drug two or three times a day.
Chatterjee (2006)[31]	Scotland	Since compliance also improves compared to the doctor-patient relationship, the term "concordance" can be used.	The concept of concordance and what it entails should be more considered in the medical field.
Ciechanowski et al (2000)[32]	USA	Understanding how much depression can affect adherence to drugs and diabetes care.	Depressive symptoms greatly affect diabetes care.
Claxton et al (2001)[33]	USA	Understanding how good compliance depends on the frequency of doses.	Simpler dosing systems help to achieve good compliance.
Connor et al (2004)[34]	New Zealand	Systematic review to understand if combined fixed-dose and unit-of-use packaging are cheaper to achieve good compliance.	Further investigation would be needed to understand the extent of the benefits.
Cramer (2004)[35]	USA	To detect how many times the patients of the study did not take the drugs prescribed for diabetes.	Electronic monitoring systems have been useful to improve adherence.
Cramer et al (2004)[36]	Denmark and USA	Understanding whether the AERx® electronic device can help increase compliance.	The device seems to provide good results to improve compliance.
Cramer et al (2003)[37]	Denmark and USA	Understanding whether the AERx® iDMS device was a good solution for more accurate glycemic control.	The results demonstrate that the AERx® iDMS brings more accurate glycemic control.
Cyrino et al (2009)[38]	Brazil	Highlighting that traditional aspects of diabetes care fail to respond adequately to the challenges of such complex treatment.	Empowerment strategies are proposed to help improve diabetes treatment.

(*Continued*)

Table 1 (Continued).

Reference and year	Country/ location	Purpose	Results
Dailey et al (2001)[39]	USA	Understanding which anti-hyperglycemic drugs are best for achieving good compliance.	The simplest drug treatment was also the most effective.
Dailey et al (2002)[40]	USA	The persistence and compliance of patients with different regimens of antihyperglycaemic was assessed.	Compliance with sulphonylurea or metformin alone was 45% higher than polytherapy.
De las Cuevas (2011)[41]	Spain	Provide a clarification of the terms "Compliance", "Adherence", "Concordance".	The concordance could be a parameter to be aimed at. Compliance and adherence are more useful for scientific medical measurements.
Delamater (2006)[42]	USA	The causes of low adherence among patients with diabetes are examined.	Greater collaboration between doctor and patient improves adherence.
Donnan et al (2002)[43]	Scotland	Understanding whether the administration of the drug once a day can help to have a better adherence.	Taking only one pill a day improves adherence.
Fielding and Duff (1999)[44]	UK	The article examines the progress made over the last 20 years by behavioral research in determining the many factors that influence adherence to treatment.	The article suggests how to improve compliance and health results in clinical practice.
Funnell and Anderson (2000)[45]	USA	Evaluating how the patient empowerment process improves compliance.	Greater collaboration between doctor and patient helps improve compliance. A redefinition of roles is needed to better address the challenges of diabetes.
Funnell and Anderson (2004)[46]	USA	Find more effective methods for managing chronic diseases.	Greater patient involvement in diabetes care intervention strategies delivers effective results.
Gadsby (2002)[3]	UK	Analyze the development of treatments for type 2 diabetes.	It will be important not only that the treatment be effective, but also that the behavioral modalities of the doctor are friendly with the patient.
García-Pérez et al (2013)[47]	Spain	Analysis of the factors influencing adherence to the treatment of type 2 diabetes mellitus.	Poor adherence is caused by different types of variables that include, among other things, also psychological factors and complexity of the dosage regimen.
Gedawy et al (2017)[48]	Australia	Factors related to oral administration of insulin are investigated	Oral administration of insulin could improve patient compliance with diabetes.
Glasgow and Anderson (1999)[49]	USA	The authors have compared the terms "compliance", "adherence", "empowerment", "self-care", "self-management".	The authors highlight the importance of patient-centered care.
Grant et al (2003)[50]	USA	Evaluate if adherence improves by decreasing the prescribed medications.	The study highlights that adherence does not depend on the number of drugs prescribed.
Guillausseau (2003)[51]	France	Evaluate the role played by oral antidiabetic agents.	Decreasing the daily administration of drugs increases compliance.

(*Continued*)

Table 1 (Continued).

Reference and year	Country/ location	Purpose	Results
Guillausseau (2005)[52]	France	Investigating whether reducing the frequency of anti-hyperglycemic drugs improves metabolic control.	Reducing the frequency of anti-hyperglycaemic drugs could bring great benefits.
Harris (2000)[53]	USA	Check whether the most modern medical care in type 2 diabetes has brought improvements.	Compared to current treatment, medical care and patient self-care practices could be improved.
Hayes et al (2008)[17]	USA	Understanding which modalities of intervention could help to obtain better results in the treatment of type 2 diabetes.	The modalities of intervention suggested to improve the results for the treatment of diabetes have currently provided heterogeneous results.
Helme and Harrington (2004)[54]	USA	Identify the factors capable of implementing compliance.	Results indicate that patient and doctor compliance acquisition strategy has been correlated.
Henshaw (2006)[55]	UK	Investigates the National Service Framework factors that help achieve empowerment for people with diabetes.	The quality of the doctor-patient relationship must be taken into account.
Howorka et al (2000)[56]	Austria	Investigate the consequences of a structured insulin treatment instruction.	The structured insulin treatment instruction (FIT) has reported numerous benefits, including improved glycemic control.
Ibrahim et al (2010)[57]	Egypt	Evaluate the compliance of patients with diabetes.	Low compliance has been shown. educational and training programs are proposed to improve these results.
Ingersoll and Cohen (2008)[58]	USA	Correlations between drug adherence and chronic disease are investigated.	The frequency of the dosage and the complexity of the regimen influence adherence.
Istepanian et al (2009)[59]	UK	Evaluate whether mobile telemonitoring can improve glycemic control and blood pressure in patients with diabetes.	Mobile telemonitoring offers benefits for treating diabetes.
Jensen et al (2017)[60]	Denmark	Understanding the risk factors of adherence reduction related to the different phases of treatment.	Factors that can decrease adherence are different from the treatment phases.
Kardas (2005)[61]	Poland	Understanding whether patients treated with sulfonylureas daily have better compliance than those treated with sulphonylureas twice a day.	Patients treated with sulphonylureas daily have better compliance.
Keers et al (2004)[62]	the Netherlands	Determine the effects of the multidisciplinary intensive education program (MIEP) and its influence mechanisms.	The MIEP offers advantages for self-managed treatment.
Kennedy-Martin et al (2017)[63]	UK and USA	Explore the published evidence on the costs of health care associated with adherence or persistence of antidiabetic drugs.	Non-adherence to the drug increases the costs of health care.
Kyngäs (1999)[64]	Finland	Offer a theoretical model capable of investigating compliance in young people with diabetes.	The model seems to offer good results that encourage the creation of a compliance verification tool.

(*Continued*)

Table 1 (Continued).

Reference and year	Country/ location	Purpose	Results
Kyngäs (2000a)[65]	Finland	Understanding the factors that determine compliance in adolescents who have a chronic illness.	Good compliance is determined by different types of factors, including a high level of motivation and adequate support from parents, doctors and nurses.
Kyngäs (2000b)[66]	Finland	Analyze the factors that determine good compliance in adolescents with diabetes.	Compliance results also depend on the type of support that adolescents receive and on their motivational level.
Kyngäs et al (2000a)[67]	Finland	Understanding, through a literature review, what influences compliance in adolescents who have type 1 diabetes mellitus, chronic asthma, arthritis and epilepsy.	What most influences compliance in adolescents is their predisposition to coping with the disease. The levels of compliance also affect the support that parents, doctors and nurses are able to offer adolescents.
Kyngäs and Rissanen (2001)[68]	Finland	Describe the factors that predict compliance in chronic adolescent diseases.	The levels of compliance depend greatly on the motivation of adolescents and the support that parents, doctors and nurses can offer.
Kyngäs et al (2000b)[69]	Finland, USA, and UK	Review of the literature on factors influencing compliance in adolescents who have a chronic disease.	An adolescent with a chronic illness has more disorders related to emotional well-being. The relationship that adolescents have with family and doctors affects the results of compliance.
Kyngäs et al (1998)[70]	Finland and UK	Understanding the mental representations that adolescents with diabetes have over diabetes care, relationships with doctors, family and friends.	Adolescents who perceived disinterested control by doctors, paternalistic relationships from friends, and dominant attitudes on the part of their parents showed low levels of compliance.
Lawler and Viviani (1997)[71]	USA and Australia	Compliance in diabetes care has been evaluated to determine the doctor's performance.	Lack of compliance may indicate deficiencies in the doctor's knowledge and lack of patient confidence.
Lobach and Hammond (1997)[72]	USA	Determine whether the use of a customized patient management protocol improves compliance.	The use of a personalized patient management protocol improves compliance.
Lombardo et al (2005)[73]	Italy	Investigate the compliance of different family groups and recognize the elements that can lead to the health of children and adolescents with insulin-dependent diabetes mellitus.	By increasing the quality of cooperation, there will be improvements in the compliance of children and adolescents with insulin-dependent diabetes mellitus.
Lutfey and Wishner (1999)[11]	USA	Understanding how the transition from the concept of "compliance" to the concept of "adherence" can bring improvements.	Turning to a more social paradigm to understand patient behavior, professionals can broaden solutions regarding therapeutic adhesion.
McNabb (1997)[13]	USA	Understanding how the patient's self-care behavior can be measured.	The concept of "adeherence" is not sufficient to frame the behavior of "self-care".

(*Continued*)

Table 1 (Continued).

Reference and year	Country/ location	Purpose	Results
Michie et al (2003)[4]	UK	This review of the research highlights several concepts regarding patient-centered consultations in order to understand if health outcomes differ based on the use of different concepts.	It should be investigated through other experimental studies whose concepts based on the patient's centrality can provide better results for his health.
Moström et al (2017)[74]	Sweden	Examine self-monitoring of blood glucose in people with type 1 diabetes and understand the factors that lead to better adherence.	Studies show the importance of using additional glucose monitoring tools.
Mullen (1997)[9]	USA	To show that a terminological change to describe patient compliance produces a change in behavior.	With coaching and a non-judgmental attitude from the prescriber, patients are more likely to take the drug.
Nazir et al (2017)[75]	Pakistan	Evaluates the correlation between quality of life as a function of health and compliance with the treatment of patients with type 2 diabetes mellitus.	There is no significant correlation between quality of life as a function of health and respect for the treatment of patients with type 2 diabetes mellitus.
Norris et al (2001)[2]	USA	Systematic review of the literature in order to investigate how self-management of type 2 diabetes is adequate.	It emerges that especially in the short term the self-management of type 2 diabetes is adequate.
Norris et al (2002)[76]	USA	Understanding whether self-management of type 2 diabetes leads to better results on glycemic control.	The advantages offered by self-management education decrease after 1–3 months.
Odegard and Capoccia (2007)[7]	USA	Understand through a systematic review which interventions improve adherence in diabetes.	Studies conducted to confirm the main obstacles to adherence of diabetes drugs still appear to be limited.
Paes et al (1997)[77]	the Netherlands	Understanding if dosing frequency affects diabetes compliance.	Dose frequency reduction can reduce total non-compliance, but at the same time increases the risk of excessive consumption.
Paterson (2001)[78]	Canada	It investigates the decision-making process of self-care in diabetes.	One reason for low compliance is the lack of information that professionals give for diabetes management.
Pladevall et al (2004)[79]	USA	Determine whether measures based on drug exposure of drug adherence are associated with clinical outcomes in patients with diabetes.	Further study is needed on the methods for introducing evidence based adherence measures into routine clinical practice and on how to use these measurements to effectively improve adherence and health outcomes in the management of chronic therapy.
Pugh et al (2003)[5]	USA	Evaluate the difference in prescribing models in the years 1997–1999 for patients with type 2 diabetes.	The theory of innovation can be a support for the development of more effective projects.

(*Continued*)

Table 1 (Continued).

Reference and year	Country/ location	Purpose	Results
Renders et al (2001)[80]	the Netherlands, UK, and USA	Evaluate whether the interventions aimed at health professionals have contributed to the improvement of diabetes treatment.	The interventions aimed at health professionals and the possibility of providing more education to the patient on diabetes management have contributed to the improvement of treatment.
Renders et al (2000)[81]	the Netherlands, UK, and USA	Examine the results obtained from interventions aimed at health professionals to improve the management of patients with diabetes.	Patient-centered interventions can offer benefits. The role of nurses is considerable to improve adherence to treatment.
Rosen et al (2003)[82]	USA	Determine if the neuropsychological function is associated with adherence to the prescribed drug.	To effectively evaluate patient adherence their neuropsychological functions should be investigated.
Roter et al (1998)[83]	USA	Understanding what interventions occurred between 1977 and 1994 have been more effective in increasing patient compliance.	The most effective interventions are those that take into account affective, cognitive and behavioral aspects.
Schaper et al (2017)[84]	the Netherlands and Denmark	Understand what type of drug dosage may be most effective for the treatment of patients with diabetes.	A treatment with flexible dosage, able to meet the patient's requests, that could bring advantages.
Schectman et al (2002)[85]	USA	Evaluate adherence to the treatment of patients with diabetes who have a low income.	Specific assistance should be provided for patients with diabetes who have low incomes.
Schilling et al (2002)[86]	USA	Understand the implications regarding the concept of self-management of type 1 diabetes in children and adolescents.	It is important to be able to obtain a more precise definition of the concept of self-management.
Shenolikar et al (2006)[87]	USA	Understanding whether adherence to antidiabetic drugs was linked to the ethnic group.	Adherence to the antidiabetic drug has been associated with the ethnic group.
Shoemaker et al (2017)[88]	USA	Investigate the factors that lead teens with type 2 diabetes to not comply with the follow-up path.	One of the factors that most affects the follow-up phase is the age: younger adolescents are more likely to follow the whole path.
Shrivastava et al (2013)[14]	India	Emphasize the role of physicians in promoting self-care activities in diabetic patients.	To improve the self-management of diabetic patients, a systematic and integrated approach must be developed.
Srinivasan et al (2017)[89]	India	Identify the factors that hinder the continuous investigation of diabetic retinopathy in diabetic patients.	One of the factors that hinders the control of diabetic retinopathy is the lack of patient awareness of the consequences of this eye condition.
Steinhardt et al (2015)[90]	USA	Evaluate the importance of resilience in the treatment of type 2 diabetes.	The RB-DSME is adequate to improve health; a large-scale randomized trial is justified.
Steinhardt et al (2009)[91]	USA	Understanding if the "Diabetes Coaching Program" brings improvements to diabetes self-management.	The study shows the effectiveness of the Diabetes Coaching Program on diabetes self-management.
Subramanian et al (2017)[92]	USA	Evaluate strategies that improve preventive diabetes treatment.	It is advisable to introduce technological tools within the diabetes prevention program.

(*Continued*)

Table 1 (Continued).

Reference and year	Country/ location	Purpose	Results
Sugiharto et al (2017)[10]	Indonesia, Taiwan, and Australia	Offer nurses an educational program for the treatment of patients with type 2 diabetes.	This program has improved the performance of nurses in the treatment of problems with type 2 diabetes.
Sweileh et al (2005)[93]	Palestine	Detect data that shows the level of compliance of patients who have chronic illness.	From the data obtained it is necessary to develop further techniques to improve patient compliance.
Tilson (2004)[13]	USA	Analyze health care developments in order to identify the most appropriate terms in the medical journey.	The term "adherence" should be used in the patient's collaborative attitude towards treatment.
Timms and Lowes (1999)[94]	UK	This article provides recommendations for nursing practice related to the treatment of adolescents with diabetes.	For adolescents with diabetes, a complex treatment regimen may result in a failure to adhere to the treatment program, which increases the risks for complications related to diabetes in old age.
Toobert et al (2000)[95]	USA	Identify a tool capable of summarizing the self-management activities of diabetes.	A questionnaire was found that allows to obtain valid data in reference to self-management of diabetes.
Vermeire et al (2005)[96]	Belgium and UK	Examine the results of interventions on patients with type 2 diabetes mellitus.	At present, it does not seem that the proposed interventions have succeeded in improving the adherence of diabetic patients.
Walker and Usher (2003)[97]	USA	Review recent literature on the adult patient regarding diabetes care recommendations.	In order to achieve improvements in patient health, diabetes research must be increased.
Wens et al (2004)[98]	Belgium and UK	Show how Cramer's systematic research does not take into account the important articles in the Embase database.	The possibility of facilitating access to databases can help to obtain more satisfying scientific research results.
Winer et al (2005)[99]	USA	Evaluate if a combination therapy can have better results on compliance than a monotherapy.	The result shows that the combination therapy gives more results than monotherapy.
Worrall et al (1997)[100]	UK	Evaluate whether family doctors follow the indications provided by the Canadian Diabetes Association.	The results show that family doctors offer good care to type 2 diabetic patients.
Zhao et al (2008)[101]	USA	Evaluate whether adults with diabetes follow the American Diabetes Association's physical activity guidelines.	The results show that adults with diabetes have more difficulty following the physical activity program proposed by the American Diabetes Association.
Zhu et al (2017)[102]	China	Evaluate the reliability and validity of cultural adaptation of an instrument that investigates how to manage type 1 diabetes in young patients.	The cultural adaptation of the tool offers good validity and reliability.

seems to be a correlation between the quality of an established cooperation and the quality of diabetic treatment. When we talk about the factor of friendship we enter into subjectivity closely linked to the personality of the health professional. The studies on compliance in adolescence[64–70,88] highlighted that the crucial factor for achieving the best possible treatment depends mainly on the type of relationship that the patient is able to establish with health-care workers, family members and friends. It can be seen from other studies that the importance of the patient-health professional relationship seems to play a decisive role at any age.[21,26,38,45,54,57] In light of the above, it seems that in order to achieve an improvement in the patient's compliance with diabetic care the main solutions are traceable in the possibility of using less painful procedures in taking the required drugs. This is a way of increasing the patient's knowledge of the chronic disease,[29,89,93] while also improving the relationship between the health professional and the patient. Perhaps, the health professional should favor those essential self-care components that Shrivastava summarizes in the seven essential behaviors: healthy eating, being physically active, monitoring blood sugar along with medications, good problem-solving skills, healthy coping skills and risk-reduction behaviors.

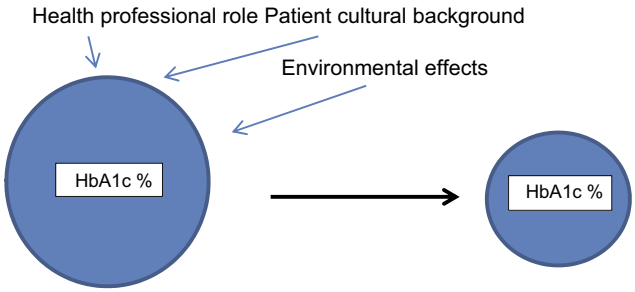

Figure 1 The arrow shows the remarkable reduction of HbA1c % in the favourable condition of full compliance, where the patient maintains a passive role.

Adherence

This term refers to the health professional prescriptions regarding timing, doses, frequency and periods of drugs-consumed.[103]

From this it is possible to notice how adherence to therapy is defined as the extent to which a person's behavior in taking medication, following a diet and/or performing changes in lifestyle, corresponds to the recommendations agreed upon by a health professional. Research suggests that adherence to therapeutic recommendations for diabetes treatment is low.[96] Producing an effective improvement, could either reduce the risk of complications caused by ineffective treatment or decrease the frustrations of the said health professionals.[42]

The reasons for non-adherence are multifactorial and difficult to identify. They include age, information, perception and duration of the disease, complexity of the dosage regimen, poly-therapy, cognitive factors, tolerability, clinical inertia, socioeconomic problems, culture, patient education and beliefs, social support and poly pharmacy.[18,32,43,47,50,82,85,87,97] Those studies also indicate how adherence is implemented through a combination of fixed-dose tablets and less frequent administration regimens, through educational initiatives - with particular attention to the quality of communication between patient and health professional - and through reminders and support systems to help reduce costs. Overall, some results suggest that fixed dose combined tablets and individual dose packaging may improve adherence in a number of settings, but the limitations of available evidence indicate that uncertainty remains about the extent of these benefits.[34] Electronic monitoring systems have been useful to improve adherence to individual patients, and could help health professionals to identify patients who need additional support;[35] however, even in this case it can be seen how the results obtained cannot completely overcome the problem of adherence.

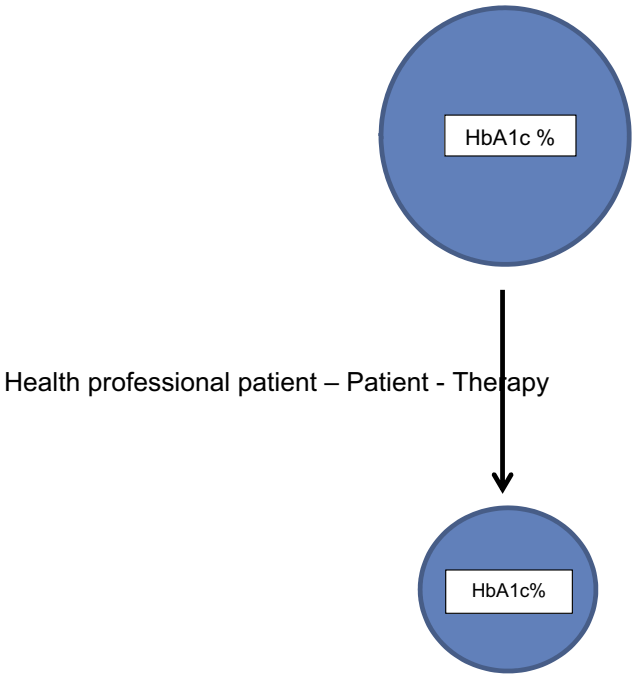

Figure 2 The arrow shows how adherence improves treatment. Also in this case the patient maintains a passive role.

Concordance

The term refers to the deep knowledge of the relationship and to the achievability of examining crucial questions regarding the patient's lifestyle.[104]

It is important to clarify the dynamics that differentiate the various aspects of the approach to pharmacological therapies in diabetes,[20] since the interactive level between clinicians and patients should not be experienced exclusively as an instructive end,[21] but as a space for the grouping of skills and support in the decision-making process related to the drug therapy.[41] Regarding the terminological transition from compliance to concordance,[8] there is a need to overcome the emotion related to rigid orders, to a relationship based on cooperation. It would make the process of taking medicine more stress-free, considering the subject as a decision-maker. The patient's consideration avoids undergoing orders that place the agents on different levels, and considers both figures of equal breadth.[31]

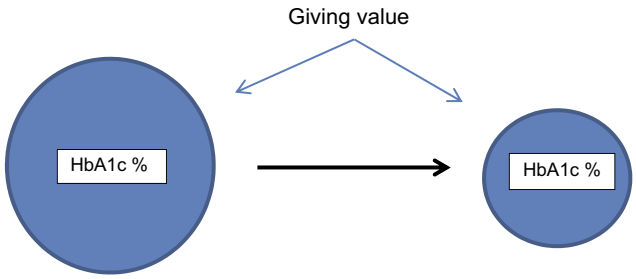

Figure 3 Patient active role with cooperation.

Empowerment

This term refers to the strengthening and improvement of power.[103]

103Empowerment can be considered as a process, in which the contact between an authority and another figure generate improvements in the state of health. There are some studies that suggest setting up structured objectives,[56] adapted through problem-solving practices and coping strategies.[24,62] The term includes several associated meanings, such as patient-centered and collaborative care but a collaborative approach to clinical reality remains transversal.[23] Several scientific contributions tend to emphasize the importance of education in empowerment groups.[6,55] However, we cannot help but consider the fact that processes of the over-evaluation of empowerment can produce negligence on other important issues related to the treatment of chronic diseases, as suggested in a review by Paterson.[78]

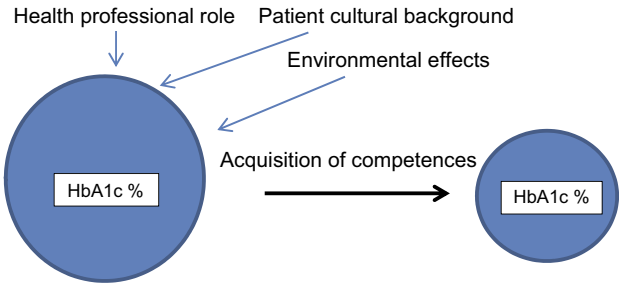

Figure 4 Patient active role with acquisition of competences.

Self-management

This term refers to a system of participative management.[103]

From a review by Norris et al,[2] it emerges that educational self-management and cooperation with patients can be more effective than the exclusive intervention of the health professional, for example glycemic, weight and lipid control. The author reports important scientific contributions that clarify the role of major and minor life events related to self-reported compliance, clarifying that educational intervention can be considered as an indicator of improvement in health status,[9] even though it is still unclear how to achieve certain clinical results. It is therefore evident that self-management education produces positive effects, as it is also known that the benefit begins to decline from one to three months after the intervention, suggesting the need to implement practices aimed at promoting them.[76] Multi-faceted and organizational interventions that would facilitate structured patient reviews are effective in care pathways.[10,80,81]

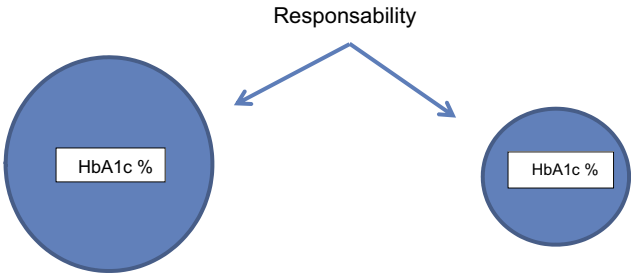

Figure 5 Active role of patient with responsibility.

Discussions

The results related to the adherence in the treatment of diabetes highlight a critical fact, because over time the treatment has had different meanings. The Table 1 contains a large number of articles related to the theme; the various articles have posed the problem. Can these terms be used as

synonyms or do they need a distinction? In the first analysis the Figures 1–5 show how the words (compliance, adherence, concordance, empowerment, self-management) empathize the passive or active role of the patient, the exclusive role of the health worker and the synergy of more professionals. The current research involves the collaboration of various figures related to the clinical field; they agree on the need to implement the knowledge of the phenomena related to the failure of adherence. The review of the literature has highlighted how difficult it is to understand the implications of a clinical fact that interfere with the assumption of therapy. Among the elements that lead to these results it would be useful to consider the unconscious aspects of patients. It is noticed that these aspects are dictated by emotions such as desire expressed differently if the patient has a passive role, as shown in Figures 3–5. It seems interesting to note how all five terms can currently be used according to: a) health education; b) knowledge of the patient; c) level of emotional maturity of the subject; d) personality type; e) value given by the health professional to cognitive and emotional processes; f) life planning; g) availability to knowledge; h) resilience.

However, it is not possible to respond hastily to some issues. Is it certain that among the terms "compliance", "adherence", "concordance", "empowerment", "self-management" a term can bring us closer to the patient's experience? Is it evident that we can confide with the patient's experience following the guidelines of one approach instead of another? Is it not true that a chronic pathology like diabetes could, in the long run, provoke a deviation in the subjective perception of the Self?

These questions, rather than discouraging health care, should shift attention from the objective processes of care to the comprehension of each patient. This is close to the phenomenological approach introduced by the German phenomenological tradition.[105] In this case, one could easily notice how the quality of the therapeutic proposal, which in self-management would seem to be the best because it activates the conscience in terms of responsibility, in a chronic disease that is so widespread like diabetes it would be effective only in terms of ideals. Since therapy is a path rather than a goal, the idea is to propose a symbolic integration inherent in the very word of self-management. The word Self implies the overcoming of the Ego emphasized in compliance and in adherence, the intellectual overcoming of concordance, the mechanical cognitivism of empowerment.

Conclusions

The vast amount of literature, rather than emphasizing the successes and failures of the treatments, should offer a synthesis based on the complexity that every chronic disease poses. We suggest that the undoubted advantages of multi-disciplinary studies have contributed to a lengthening and improvement in the quality of life. We are faced with a complex phenomenology, which is foreseen by a continuum of damage that goes from the biological lesion to the maladjustment of the subject. The concept of care must be preceded by the promotion of quality of life and prevention policies. Based on the research carried out, a comprehensive need is outlined. We must take into account the resistance and the difficulties of including some aspects within patient care pathways. The valorization and the comprehension of the subjective modalities[106] of conducting lifestyle would produce knowledge useful to bring the patient closer to clear indications of the medical prescriptions. The unknown aspects of physical and existential damage[107] increase the weight of the phenomenon. The possibility of basing future treatments even on existential knowledge in the scientific field is certainly advantageous. The practical implications of this article refer to the inclusion of existential models of knowledge. The figures involved in this article have helped to suggest that the various points of view can be integrated into the field of care for diabetic patients, in order to turn the research experience into a practical support for patients and their subjective differences. This research aims to suggest an open point of view to the consideration of functional models that provide comprehension.

The peculiarity of the clinical psychology contribution suggests that even for chronic diseases such as diabetes, the mere possibility of listening to the patient could be a valid measure to alleviate the loneliness that aggravates every condition of suffering.[108]

Disclosure

The authors report no conflicts of interest in this research.

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