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A step-by-step structured medication counseling approach for asthmatic patients

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Abstract

This article provides an overview of the development of a structured counseling program for counseling asthma patients in Saudi Arabia. Since the prevalence of asthma is rising alarmingly in Saudi Arabia, much of effort is needed to tackling this problem. The strategies often go beyond pharmacotherapy and involvement of health professionals including pharmacists. Various available guidelines were reviewed and based on these literatures and authors' own experiences the initial draft of the counseling technique was formed and then validated as per the standard protocols. Authors' finally arrived at a stepwise approach involving seven steps. This method can be used by pharmacists in Saudi Arabia and other countries in the region while counseling asthma patients.

Key words: Asthma, Structured counseling technique, Pharmacists, Saudi Arabia

1. Introduction

As currently understood, asthma is characterized by reversible obstruction of the bronchial airways, which restricts the airflow to the lungs. Typical clinical presentations include episodes of coughing, wheezing, tightness of the chest, and shortness of breath. Although the pathophysiology of asthma is mostly well understood and a variety of effective therapies are available for its treatment (Masoli et al., 2004), asthma is still associated with a socioeconomic burden, bothersome symptoms, impaired physical activity, increased levels of anxiety and depression, and impaired work and social life (McCauley et al., 2007). The treatment goals remain symptom control and improvement of the patient's QoL.

A number of factors have been identified that influence the achievement of these therapeutic goals, related to the disease itself, the physician, and the patient. The patient-related factors include sociodemographic factors, adherence, psychiatric comorbidity, psychological characterizations, perceptions, expectations, behaviors, and the patient's knowledge about the disease (Braido, 2013). The negative impact of these factors on treatment can be reduced through proper education. The third report of the National Asthma Education and Prevention Program Expert Panel (NAEPP) by the US NIH recommends that pharmacists, along with other healthcare professionals, provide medication counseling for asthma patients to improve the outcomes and quality of care (NHBLI, NAEPP-3, 2007).

Patient counseling is one of the key responsibilities of the pharmacist. Because of their knowledge about drugs, disease state, lifestyle, medications, and medication administration techniques, along with good communication skills, pharmacist are in a position to educate asthma patients and help improve the control of symptoms. Educational and psychological interventions have been associated with improved outcomes in patients whose management involves pharmacist-delivered interventions (Sun et al., 2010).

A key point to bear in mind when counseling patients with asthma is that the patient should be given information on the disease, the role of medications, proper administration techniques, identifying and avoiding the triggers, coping with stress, self-monitoring, and managing an acute attack (NHBLI, NAEPP-3, 2007). The benefits of patient education in improving QoL and outcomes of asthma therapy have been reported widely.

In order to device a structured counseling technique for counseling asthma patients, a thorough

literature review was performed. *Google Scholar* was searched using the search terms "pharmacist's intervention," "structured approach," "pharmacist-coordinated medication counseling," "counseling," and "asthma," and PubMed/Medline using the MeSH terms "pharmacists," "pharmaceutical services," and "asthma". The relevant articles were grouped and reviewed as per the objectives.

2. Evidence for the benefits of pharmacist-led medication counseling for asthma patients

In a randomized controlled trial in 18 pharmacy locations in Canada, investigators studied the impact of PC on clinical, economic, and QoL outcomes in 204 asthma patients over a one-year period (McLean et al., 2003). The interventions included a 1-hour visit every 2–3 weeks for three visits, after which the frequency of visits was reduced to one every 3 months. Pharmacists assessed the patients' readiness for change to tailor the education for self-management skills appropriately and to adjust the therapy. The total symptom score significantly decreased from 1.081 to 0.531 in the test group; in the control group, they decreased from 1.058 to 0.928. Days off from school or work were reduced by 0.6 days a month on average, and the use of short-acting β_2 agonists was reduced by 50%. The study concluded that specially trained pharmacists following a protocol can bring about impressive improvements in clinical, economic, and patient-related measures for asthma patients.

A study at the Institute of Pulmonary Medicine and Research Centre, India, evaluated the outcome of providing PC service to 66 asthma patients (Shanmugam et al., 2012) and the study results showed a positive impact of PC in improving patients' asthma-related QoL, lung function, and asthma control.

It has also been reported that small-group asthma education delivered by pharmacists was more effective than usual care in improving clinical and patient-related asthma outcomes (Kritikos et al., 2007). A study in New Zealand assessed the impact of a PC specialist asthma service provided by community pharmacists on a sample of patients with asthma (Emmerton et al., 2003). The outcome indicators measured were changes in health status and QoL. There was significant improvement in asthma-related QoL (as measured by the AQLQ) following the introduction of the service, and pharmacists were able to identify, prevent, or resolve over 400 drug-related problems. A similar observation was noted in a study carried out by Santos et al. (2010). The authors concluded that counseling provided by pharmacists to patients was beneficial in assisting patients to improve inhalation technique, particularly the use of MDIs. Similarly, Hunter and Briant (1994) noticed that counseling provided by pharmacists to the parents of children who suffered from asthma was helpful for improving their children's understanding about asthma and better controlling their illness.

In a study of Taiwanese patients with asthma, Wang et al. (2010) investigated the impact on asthma knowledge, QoL, and clinical outcomes of an asthma educational program provided by a nurse combined with asthma counseling provided by a pharmacist. A total of 91 asthma patients were randomly assigned to a nurse-administered education program (Group 1), the same education program with additional pharmacist counseling (Group 2), or a control group that received only routine care. Three questionnaires were used for assessment at months 0, 3, and 6. Knowledge scores of the patients in Groups 1 and 2 increased significantly compared to the control group. Both intervention groups showed a significant increase in knowledge scores with longer follow-up. Group 2 showed a significant improvement in clinical symptoms between baseline (month 0) and month 6). The authors concluded that an asthma-structured education program brought an increase in general asthma knowledge but no significant improvement in health-related QoL. Another study by Shareef et al. (2014) reported an improvement in the QoL of asthma patients who were provided counseling by a pharmacist.

Thus, it is well studied and documented that pharmacist-led medication counseling to asthma patients have had a positive impact on clinical outcomes and improved QoL. It is also evident that pharmacy interventions have improved asthma patients' knowledge about their disease and medications.

3. Available guidelines for pharmacist-coordinated patient counseling

Several guidelines regarding pharmacist-coordinated patient counseling have been published. These are summarized in this section.

3.1 US Omnibus Budget Reconciliation Act, 1990

The Omnibus Budget Reconciliation Act of 1990 (OBRA 90) enacted by the US congress has laid down patient counseling standards (Omnibus Budget Reconciliation Act of 1990, 1990). OBRA 90 recommends that dispensing pharmacists discuss and educate patients about their unique drug therapy regimen when dispensing their prescriptions. The pharmacist should professionally judge the requirements of the patient with regard to medications and address them in a manner that is easily understandable by the patient. The essential information that needs to be discussed with patient is listed in Table 1.

Table 1. OBRA 90 recommendations for patient counseling

Information to be included by the pharmacist
Name, description, route of administration, dose, dosage form of medication
Duration of drug therapy
Special directions and precautions
Administration and use by the patient
Common severe side effects or adverse effects or interactions, and therapeutic contraindications that may be encountered
Techniques for self-monitoring drug therapy
Proper storage, refill information, and appropriate action in case of a missed dose

3.2 ASHP guidelines on pharmacist-conducted patient education and counseling

The ASHP published their guidelines Pharmacist-Conducted Patient Education and Counseling in 1997 to help pharmacists provide effective patient education and counseling that can contribute to positive outcomes (ASHP, 1997). Based on these guidelines, the process of counseling can be described as follows:

3.2.1 Establish caring relationships with patients

Introduce yourself as a pharmacist, explain the purpose and expected length of the sessions, and obtain the patient's agreement to participate. It is best to use the patient's primary spoken language during communication.

3.2.2 Assess the patient's knowledge

This includes knowledge about his or her health problems and medications, physical and mental capability to use the medications appropriately, and attitude toward the health problems and medications. It is important to gather information during the session about which medications the patient has been using, and any drug-related problems they are experiencing with their medications if the patient has already been using them. Using open-ended questions is recommended while asking about each medication's purpose and what the patient expects, and also ask the patient to describe or show how he or she will use the medication.

3.2.3 Provide information in a patient-friendly language and mode

By talking to the patient and using visual aids or demonstrations, fill in the patients' gaps in knowledge and understanding. It is very important to demonstrate the assembly and use of administration devices such as nasal and oral inhalers. A written handout of the oral communication should be provided to help the patient recall the information.

3.2.4 Verify patients' knowledge and understanding of medication use

At the end of the session, ask the patients to describe or show how they will use their medications and identify their effects.

With regard to the content of counseling, the pharmacist should discuss the items listed in Table 2.

In addition, any other information unique to an individual patient or medication should be provided based on the pharmacist's professional judgment.

Table 2. ASHP guidelines on the content of counseling

Information to be discussed by the pharmacist
The medication's trade name, generic name, common synonym, or other descriptive name(s) and, when appropriate, its therapeutic class and efficacy
The medication's use and expected benefits, and the onset of action and what to do if the action does not occur
The medication's route, dosage form, dosage and administration schedule (including the duration of therapy)
Directions for preparing and using or administering the medication
Precautions to be observed during the medication's use or administration, and the medication's potential risks in relation to its benefits
Potential common and severe adverse effects, with actions to prevent or minimize their occurrence, and actions to take if they occur
Action to be taken in case of a missed dose
Techniques for self-monitoring of the pharmacotherapy
Drug–food and drug–disease interactions or contraindications
The medication's relationships to radiologic and laboratory procedures
Prescription refill authorizations and the process for obtaining refills
Instructions for 24-hour access to a pharmacist
Proper storage of the medication
Proper disposal of contaminated or discontinued medications and used administration devices
Lifestyle modifications

Table 3. ASCP guidelines for counseling geriatric patients

Steps the pharmacist should take
Establish a relationship and rapport
Introduce yourself as a pharmacist
Explain the purpose and expected length of the session
Obtain the patient's agreement to participate
Determine patient-specific barriers to communication and implement a strategy to overcome these barriers
Assess the patient's knowledge about health problems and medications, physical and mental capability to use the medications appropriately, and attitude toward the health problems and medication
Assess any drug-related problems the patient may be experiencing
Adjust the pharmacotherapeutic regimens according to protocols or notify the prescribers
Provide information orally and use visual aids or demonstrations to fill the patient's gap in knowledge and understanding
As a supplement to face-to-face oral communication, provide written handouts to help the patient recall the information
Use active listening skills, good eye contact, and gestures where appropriate
Observe nonverbal cues such as body language, behavior, or facial expression for reactions
Give support, encouragement, and feedback

3.3 American Society of Consultant Pharmacists Guidelines for pharmacist counseling of geriatric patients

The American Society of Consultant Pharmacists (ASCP) has published guidelines for pharmacists counseling geriatric patients and their caregivers (ASCP, 1998). The recommended steps are summarized in Table 3.

3.4 Medication counseling tips by Prince Edward Island College of Pharmacists, Canada

Prince Edward Island College of Pharmacists in Canada has produced tips for counseling patients about medication, summarized in Table 4(PEIPB, 2005).

Table 4. Tips for counseling about medications

Steps to take
Establish a relationship; show interest in the patient (verbal and nonverbal) Verify the patient's name and the prescriber's name Establish why the patient is being prescribed the medication (if known), or the medication's use, expected benefits, and action Open the medication containers and show the patient what the medication looks like, or demonstrate its use. Explain the following: • How to take the medication • When to take and how long to take the medication • What to do if a dose is missed • Any special precautions to follow • Foods, alcoholic beverages, or OTC drugs to be avoided • How the patient will know the medication is working • How to store the medication • Whether the prescription can be refilled, and if so, when Verify the patients' knowledge and understanding Ask the patient if they have any questions Document the patient–pharmacist interaction

3.5 Asthma education according to the Canadian Asthma Consensus Report

The Canadian Asthma Consensus Report (Boulet et al., 1999) recommends asthma education as an essential component of asthma therapy, with the goal of controlling asthma via improved knowledge and changed patient behavior. According to this guideline, education should be provided at each patient contact, with good communication between health professionals and coordination of their interventions essential. The patient should be educated about self-monitoring using either measurement of peak expiratory flow or monitoring of their asthma symptoms. All patients should receive a written action plan for guided self-management that is specific to the individual and based on an evaluation of their symptoms.

The OBRA 90 recommendations for patient counseling focused on the content of the counseling and were restricted mainly to medication-related information. These are mandatory guidelines for pharmacists when counseling patients in the US. In comparison to the OBRA 90 recommendations, the ASHP guidelines are more detailed and go beyond drug-related information. They also provide complete information on the process and steps involved in the counseling procedure. The ASCP guidelines are targeted toward the counseling of elderly patients, and take into account the expectation that elderly patients will often use multiple drugs and are likely to be on chronic drug therapy. The medication counseling tips by Prince Edward Island College of Pharmacists also include over-the-counter (OTC) medications-related information in relation two patient counseling. The Canadian Asthma Consensus Report is asthma-specific and provides comprehensive guidance on counseling asthma patients. An in-depth analysis of these guidelines clearly reveals the content of a structured counseling process. These guidelines also provide the setting and scenario to be created while counseling the patients. For these reasons, the guidelines formed the core information used for developing the structured counseling approach in the present study.

4. The need for a structured counseling approach and techniques for asthma patients

In general, counseling is very much needed for patients with chronic diseases. Anticipated outcomes of counseling include the patient understanding why a medication is helpful for maintaining or promoting their well-being, accepting support from the pharmacist in establishing a working relationship and foundation for continued interaction and consultation, being able to make appropriate medication-related decisions concerning his/her medication regimen, developing improved

strategies to manage medication side effects and drug interactions, and ultimately becoming a better informed, active participant in his/her disease treatment and self-care management (International Pharmaceutical Federation, 2005). The NIH National Heart, Lung, and Blood Institute recognizes that pharmacists can help asthma patients understand that they can lead normal, productive and physically active lives with appropriate therapy (National Institutes of Health, National Heart, Lung, and Blood Institute, 1995). In asthma, the use of specialized devices (MDIs, DPIs and nebulizers) clearly warrants the need for special health professionals who can train the patients in the optimal use of these devices. Improper use of these devices leads to therapy failure. Asthma patients can often have problems with hand–lung coordination, which is crucial for the proper delivery of the drug into the lungs.

Another aspect of asthma management is the self-monitoring of drug therapy. The patient can monitor his/her disease progression with the help of a peak flow meter. Pharmacists can train patients to monitor their symptoms using peak flow meters and can recommend changes in the use of rescue medications should disease symptoms deteriorate. Pharmacists can also monitor DTRPs such as non-adherence, adverse effects, and missing a dose, can provide appropriate information on these conditions and, if needed, can recommend a visit to a physician. In addition, the early identification of adverse effects is possible if the patient is trained adequately in detecting symptoms such as gastric problems due to oral corticosteroids. If not diagnosed early, corticosteroids can lead to multiple side effects, which often are difficult to reverse following long-standing use of the offending agent.

The use of OTC products can be common among asthma patients, as with other chronically ill patients. Special patient populations such as pregnant women or renal failure patients should receive counseling regarding the possible toxicity of OTC medications and drug-drug interactions, such as the interaction with warfarin. OTC medication such as painkillers can also induce an asthma attack in patients who are prone to develop bronchoconstriction due to these medications (Daham et al., 2014).

5. A step-by-step approach for counseling asthma patients

A step-by-step approach has been developed based on the various available patient counseling guidelines and on an approach proposed by Sarriff (1993). The proposed approach is as follows:

Step I: Self-introduction by the pharmacist

At this step the pharmacist introduces himself/herself to the patient and provides details regarding the proposed counseling plan.

A. Background and purpose of the counseling

B. Approximate time taken for counseling

C. The qualification and expertise of the pharmacist providing counseling

D. Contact details of the pharmacist

Step II: Gather information about the patients

At this step the pharmacist gathers all the necessary information related to the patient. The details are as below:

A. Patient demography and contact details Age, weight, contact address, telephone number, pregnancy status.

B. Medical history

The duration of the disease, the severity, the impact of the disease on the quality of life of the patients.

C. Medication history

Any past history of intake, any history of drug allergy, any history of side effects.

Step III: Identify patient-specific drug-taking problems

Step IV: Provide counseling and related information on disease, drug and specialized devices

A. Disease-related information

At this stage the Pharmacy provides counseling to the patient regarding their asthma.

a. Safety measures while traveling

b. Prophylactic use of medicines before exercise

c. Avoidance of allergens

d. Stopping cigarette smoking

B. Medication-related information

The following medication-related information must be provided to the patient:

a. Name and description of the medication

b. The dosage form

c. Route of administration

d. Duration of therapy

e. Special directions and precautions for preparation, administration, and use of the prescribed drugs by the patient

f. Common side effects or adverse effects, or interactions and therapeutic contraindications that may be encountered, including their avoidance and the action required if they occur

g. Techniques of self-monitoring of drug therapy

h. Proper storage

i. Prescription refill information

j. Action to be taken in case of missed dose

C. Information regarding the use of specialized dosage forms/devices used in asthma.

Provide information regarding the following specialized dosage forms/devices:

a. Metered-dose inhalers

Use of the device, advantages, precautions, etc.

b. Dry powder inhalers

Use of the device, advantages, precautions, etc.

c. Nebulizers

Use of the device, advantages, precautions, etc.

Step V: Distribution of leaflets and use of compliance aids

A. Provide asthma-related information leaflets.

B. Dispense the medicines in a specialized envelop so as to improve compliance.

C. Demonstrate the specialized counseling aids to the patients.

D. Provide written information if needed for the patients.

Step VI: Obtain feedback

At this stage, the pharmacist obtains feedback from the patient who received counseling.

A. Ask the patient to recollect the information and repeat it.

B. If the patient fails to reproduce the necessary information then repeat the counseling process.

Step VII: Assess and monitor adherence

A. Is there any history of poor patient adherence?

B. Is there any evidence to suggest the success of present drug therapy?

A brief summary of the steps to be followed during the structured counseling process is presented in Table 5.

Table 5. A step-by-step approach for counseling asthma patients

Steps	Activity
I	Introduce yourself to the patient
II	Review information regarding the patient
III	Identify patient-specific drug-taking problems
IV	Provide disease-related, drug-related and device-related counseling
V	Provide leaflets and use counseling aids
VI	Obtain feedback
VII	Assess and monitor
VIII	Follow-up the patients

6. Discussion

It is well accepted that patient counseling by pharmacists is important in chronic diseases such as asthma. Asthma treatment often involves multiple medications and the use of specialized devices, and so asthma needs special focus in terms of patient education and counseling. The counseling should go beyond simply providing drug- and disease-related information, and should be a multidisciplinary collaborative approach that involves the patient and other healthcare providers. Patients with asthma often do not use their medications as directed for reasons which may be related to misinformation, boredom with the process of taking medicines regularly, side effects, or forgetfulness. In addition, there are problems associated with asthma such as constant coughing and the avoidance of cold environments, swimming, and sports activities. The pharmacist should focus on specifically targeting each of these issues, which cannot be achieved by a simple dispensing procedure; a structured counseling approach that targets multiple stages of the medication use process is required.

7. Conclusion

There have been several guidelines covering the basic contents and process of patient counseling by pharmacists. Part of the present study has been the development of a structured counseling technique based on these guidelines, a process with seven steps. The patient educational tools developed in this study were also administered to the intervention group patients during the structured counseling process.

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Correlations between Amniotic Fluid Index and others Ultrasound Fetoplacental Parameters in Fetuses with Intrauterine Growth Restriction

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Abstract

Aim: The aim of this study was to determine the correlation between Amniotic Fluid Index and others ultrasound fetoplacental parameters in fetuses with intrauterine growth restriction (IUGR).

Methods and material: A clinical prospective study was conducted and included 120 pregnant women divided in two groups: non IUGR group included healthy pregnant women *(n=60)* and IUGR group included pregnant women with preeclampsia and IUGR (n=60). Outcome measures were birth weight and following ultrasound fetoplacental parameters in fetuses with IUGR and non IUGR: Amniotic Fluid Index (AFI), Fetal Liver Length (FLL), Femur Length (FL), Biparietal Diameter (BPD). Sonography was carried out by sonda 3.5 Mhz type MINDRAY DC 7.

Results: The mean of maternal age was 30.0±6.1 years in women with preeclampsia and IUGR and 28.1±5.1 years in healthy pregnant women, $p > 0.05$. Fetuses in IUGR group had a statistically significant lower median value of AFI (Me = 6.5 cm, IQR = 4.5 to 11.0) compared to non IUGR group (Me = 14.3 cm, IQR = 12.3 to 15.7), $p < 0.001$. In fetuses with non IUGR, there were a negative correlation between AFI and: birth weight *(r_s = - .769; $p < .001$),* FLL *(r_s = - .852; $p < .001$), FL (r_s = - .837; $p < .001$)* and BDP *(r_s = - .845; $p < .001$).* In fetuses with non IUGR, there were a negative correlation between AFI and: birth weight (r_s = - .700; $p < .001$), FLL *(r_s = - .904; $p < .001$), FL (r_s = - .902; $p < .001$)* and BDP *(r_s = - .904; $p < .001$).*

Conclusion: Fetuses in IUGR group had a statistically significant lower median value of AFI compared with non IUGR group and significant correlations were found between AFI and: birth weight, FLL, FL and BDP.

Key words: Intrauterine Growth Restriction, Amniotic Fluid Index, Ultrasound Fetoplacental Parameters

Introduction

Amniotic fluid (AF) assessment by ultrasound is one of the important tools in assessing the fetal health in all risk categories especially beyond the period of viability (1). AF is the protective liquid contained in the amniotic sac of a pregnant uterus and its functions include nutritive, protective and diagnostic functions (2,3). Amniotic fluid index (AFI) by four-quadrant technique is reliable method of quantifying AF (4). Normally, it peaks at 32 to 34 weeks of gestation and after there is a gradual reduction in amniotic fluid due to increase in concentrating capacity of fetal kidneys (5). A drastic reduction in its quantity may indicate underlying placental insufficiency, which has definite implications on growing fetus. The values between 8 and 25 are considered to be normal, 5–8 low normal, and less than 5 oligohydramnios (6,7). A recent systematic review demonstrated associations between oligohydramnios, birthweight <10th percentile, and perinatal mortality, as well as between polyhydramnios, birthweight >90th percentile, and perinatal mortality (8). Presence of oligohydramnios is a clinically important predictor of outcome, especially when combined with estimated fetal weight of less than the third percentile (P = .007) (9). In the first trimester, oligohydramnios is a rare finding and is usually associated with a poor outcome. Oligohydramnios is an infrequent finding in the second trimester. In the second trimester, causes of the oligohydramnios include congenital urinary tract obstruction (51%), premature rupture

of membranes - PROM (34%), placental abruption, amniochorionic separation (7%), and early and severe Fetal Growth Restriction - FGR (5%) (10,11,12). In the third trimester, the incidence of oligohydramnios is 3%–5% in late preterm pregnancy and 5%–11% between 40 weeks and 41.6 weeks of gestation (13,14). It is recommended to follow up low risk antenatal women every two weeks after 34 weeks of pregnancy (15). The aim of this study was to determine the correlation between AFI and others ultrasound fetoplacental parameters in fetuses with IUGR.

Materials and Methods

A clinical prospective study was conducted and included 120 pregnant women divided in two groups: non IUGR group included healthy pregnant women *(n=60)* and IUGR group included pregnant women with preeclampsia and IUGR (n=60). Preeclampsia was determined with method of Last Menstrual Period (LMP), Hadlock's formula on the basis of presence of proteinuria (> 0.5 g/L) and high blood pressure (TA = 140/90 mmHg) (17). Antenatal diagnosis of IUGR was based on sonographic evaluation of the fetus, placenta, and amniotic fluid. Sonography was carried out by sonda 3.5 Mhz type MINDRAY DC 7 (Figure 1).

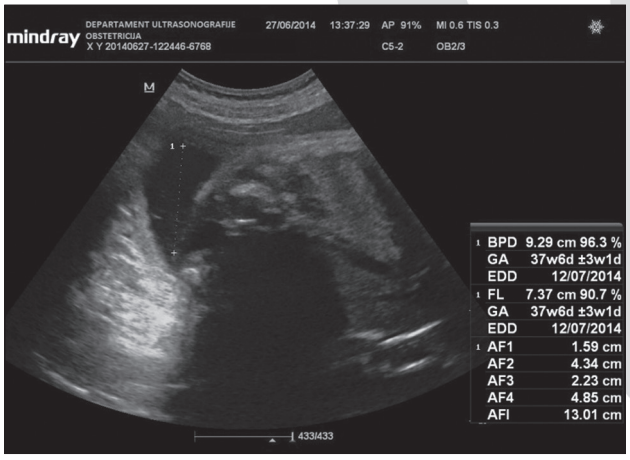

Figure 1. Measurement of AFI

The ultrasound examination was carried out after instructing the patient to empty her bladder. A pregnant woman lying on her back, the uterus is divided into four equivalent quadrants, so that the umbilicus and the linea nigra used as markers (4). After placing the gel, the ultrasound is placed perpendicularly and parallel to the spinal column. It is measured the depth of the largest pockets of amniotic fluid, without the presence of the umbilicus and small parts of the fetus (extremities) in four quadrants. AFI represents a numerical sum of all four quadrants expressed in cm.

Outcome measures were birth weight and following ultrasound fetoplacental parameters in fetuses with IUGR and non IUGR: Amniotic Fluid Index (AFI), Fetal Liver Length (FLL), Femur Length (FL), Biparietal Diameter (BPD) (Figure 1).

Results are expressed as mean value and standard deviation in case of normal distributed continue variables**,** as median and interquartile range (IQR) in case of non-normal distributed continue variables. The inspection of histograms and quantile diagrams and the Kolmogorov–Smirnov test with a Lilliefors significance level were used for testing normality of distribution of continuous numerical variables. In case of categorical variables, counts and percentages were reported. Categorical data were analyzed with Pearson's Chi-Square test or Fisher's Exact test. Statistical analysis comparing the two groups was performed with Independent Sample T-test for continuous normal distributed variables and Mann–Whitney *U*-test for continuous non-normal distributed variables. A p-value <0.05 was considered as significant. Statistical analysis was performed by using the Statistical Package for the Social Sciences (SPSS Release 19.0; SPSS Inc., Chicago, Illinois,United States of America) software.

Results

The mean of maternal age was 30.0±6.1 years in women with preeclampsia and IUGR and 28.1±5.1 years in healthy pregnant women. There is no statistically significant difference in maternal age distribution between two groups *(p > 0.05)*.

Table 1. Correlations between birth weight and ultrasound fetoplacental parameters in non IUGR (n=60) and IUGR (n=60)

groups			birth weight (g)	AFI	FLL (mm)	FL (mm)	BPD (mm)
non IUGR	birth weight (g)	rho	1.000	-.769**	.872**	.866**	.863**
		p-value	.	.000	.000	.000	.000
	AFI	rho	-.769**	1.000	-.852**	-.837**	-.845**
		p-value	.000	.	.000	.000	.000
	FLL (mm)	rho	.872**	-.852**	1.000	.992**	.983**
		p-value	.000	.000	.	.000	.000
	FL (mm)	rho	.866**	-.837**	.992**	1.000	.977**
		p-value	.000	.000	.000	.	.000
	BPD (mm)	rho	.863**	-.845**	.983**	.977**	1.000
		p-value	.000	.000	.000	.000	.
IUGR	birth weight (g)	rho	1.000	-.700**	.792**	.793**	.793**
		p-value	.	.000	.000	.000	.000
	AFI	rho	-.700**	1.000	-.904**	-.902**	-.904**
		p-value	.000	.	.000	.000	.000
	FLL (mm)	rho	.792**	-.904**	1.000	.999**	1.000**
		p-value	.000	.000	.	.000	.000
	FL (mm)	rho	.793**	-.902**	.999**	1.000	.999**
		p-value	.000	.000	.000	.	.000
	BPD (mm)	rho	.793**	-.904**	1.000**	.999**	1.000
		p-value	.000	.000	.000	.000	.

***. Correlation is significant at the 0.01 level (2-tailed). FLL = Fetal Liver Length; FL = Femur Length; BPD = Biparietal Diameter; AFI = Amniotic Fluid Index.*

Table 2. Birth weight (g) and ultrasound fetoplacental parameters in fetuses with IUGR and non IUGR.

Variables	IUGR (n=60)	non IUGR (n=60)	p-value
Birth weight (g)	2 220 (2 055 to 2 350)	3 200 (2 615 to 3 488)	<0.001
FLL (mm)	42.0 (40.9 to 42.7)	54.6 (44.1 to 56.4)	<0.001
FL (mm)	65.5 (61.5 to 69.5)	71.6 (60.5 to 72.8)	0.004
BPD (mm)	84.6 (80.0 to 86.4)	92.4 (82.3 to 93.5)	<0.001
AFI (cm)	6.5 (4.5 to 11.0)	14.3 (12.3 to 15.7)	<0.001

Note: Continuous variables are expressed as median with interquartile range (IQR, 25th to 75th percentiles), statistics by Mann-Whitney. Definition of abbreviations, IUGR = Intrauterine growth restriction; FLL = Fetal Liver Length; FL = Femur Length; BPD = Biparietal diameter; AFI = Amniotic Fluid Index.

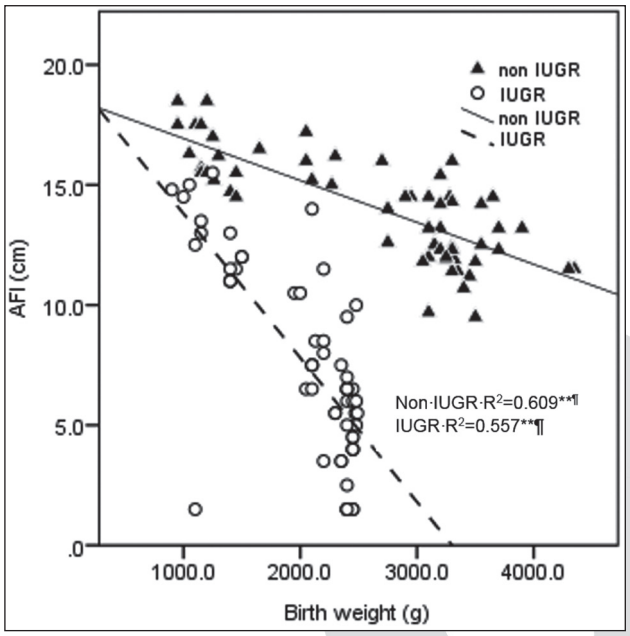

*Figure 2. Correlation between birth weight (g) and Amniotic Fluid Index (AFI) in non IUGR and IUGR groups (R^2 = coefficient of determination, ** p < .001)*

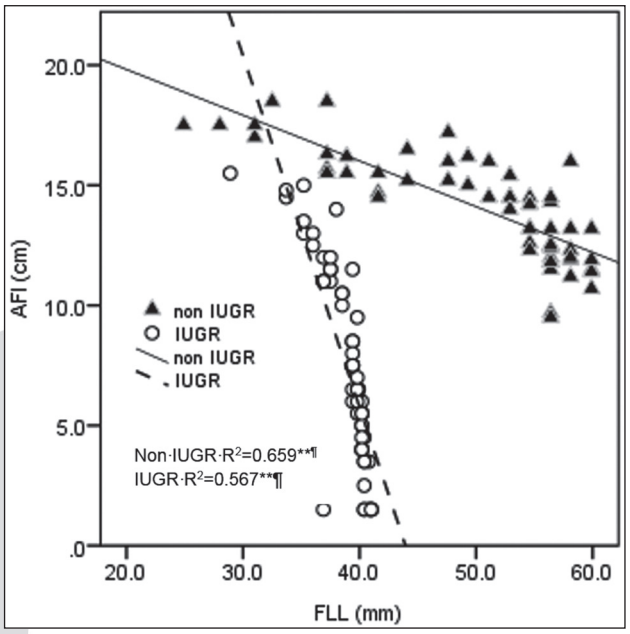

*Figure 4. Correlation between Fetal Liver Length - FLL (mm) and Amniotic Fluid Index - AFI in non IUGR and IUGR groups (R^2 = coefficient of determination, ** p < .001)*

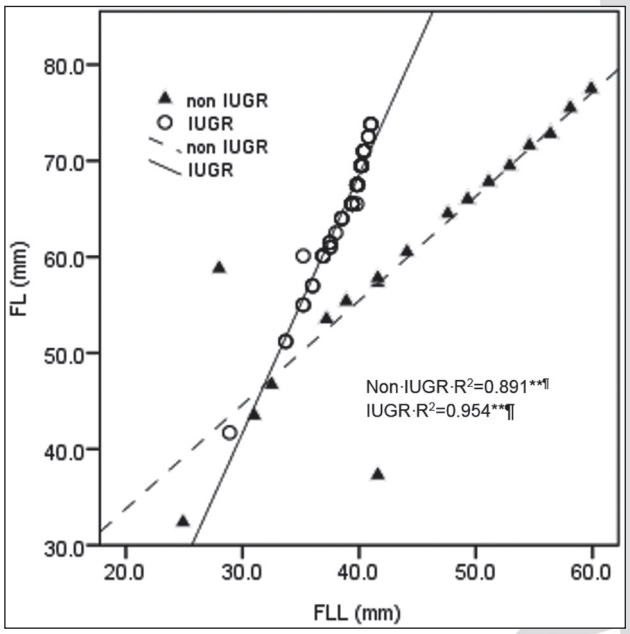

*Figure 3. Correlation between Fetal Liver Length - FLL (mm) and Femur Length – FL (mm) in non IUGR and IUGR groups (R^2 = coefficient of determination, ** p < .001)*

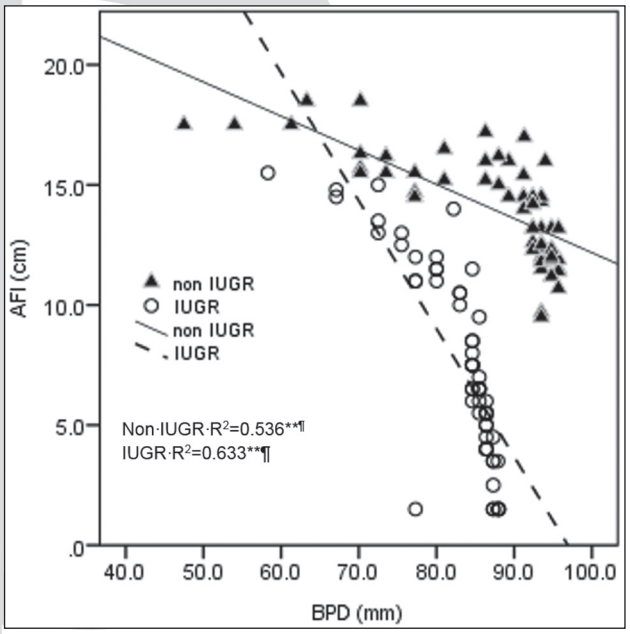

*Figure 5. Correlation between Biparietal Diameter – BPD (mm) and Amniotic Fluid Index - AFI in non IUGR and IUGR groups (R^2 = coefficient of determination, ** p < .001)*

In fetuses with non IUGR, there was: a negative correlation between AFI and: birth weight *(r_s = - .769; p < .001),* FLL *(r_s = - .852; p < .001), FL (r_s = - .837; p < .001)* and BDP *(r_s = - .845; p < .001).*

In fetuses with non IUGR, there were: a negative correlation between AFI and: birth weight (r_s = - .700; p < .001), FLL *(r_s = - .904; p < .001), FL (r_s = - .902; p < .001)* and BDP *(r_s = - .904; p < .001).*

Fetuses in IUGR group had a statistically significant lower median value of: birth weight (Me = 2 220 g, IQR = 2 055 to 2 350) compared to non IUGR group (Me = 3 200 g, IQR = 2 615 to 3 488), p < 0.001; FLL (Me = 42.0 mm, IQR = 40.9 to 42.7) compared to non IUGR group (Me = 54.6 mm, IQR = 44.1 to 56.4), p < 0.001; FL (Me = 65.5 mm, IQR = 61.5 to 69.5) compared to non IUGR group (Me = 71.6, IQR = 60.5 to 72.8), p < 0.01; . BPD (Me = 84.6 mm, IQR = 80.0 to 86.4) compared to non IUGR group (Me = 92.4 mm, IQR = 82.3 to 93.5), < 0.001; AFI (Me = 6.5 cm, IQR = 4.5 to 11.0) compared to non IUGR group (Me = 14.3 cm, IQR = 12.3 to 15.7), p < 0.001.

Discussion

In this prospective study, we evaluated AFI and others ultrasound fetoplacental parameters in fetuses with IUGR and non IUGR. In our study, fetuses in IUZR group had significantly lower median value of FLL, FL, BPD and AFI compared to non IUZR group. Fetuses in IUGR group had a statistically significant lower median value of AFI (Me = 6.5 cm, IQR = 4.5 to 11.0) compared to non IUGR group (Me = 14.3 cm, IQR = 12.3 to 15.7), p < 0.001. Insufficient evidence exists on which to base a recommendation for any intervention in the presence of borderline AFI (5.1 cm to 8 cm) in the third trimester. Sonographic assessment of fetal biometry may be a consideration because FGR (Fetal Growth Restriction) can be associated with decreased Amniotic Fluid Volume (AFV) (8). In uncomplicated term pregnancies, risk of birth weight below the 10th percentile has been reported in fetuses with ultrasound findings appropriate for gestational age and isolated oligohydramnios (AFI < 5 cm) (16). In our study, significant correlations were found between AFI and: birth weight, FLL, FL and BDP. In the retrospective cohort study of Wood SL et al., pregnancies with a borderline AFI had a relative risk of 13.76 for concurrent IUGR (p < .001) (17). In the study conducted by Cofinas et al., the AFI correlates to the percentile of the estimated fetal weight and the abdominal circumference in non-diabetic and diabetic groups, suggesting that there may be a relationship between increased AFI and large for gestational age fetus independent of diabetes (18). Gumus et al., reported an increased incidence of IUGR in pregnancies with a borderline AFI. They suggested careful monitoring in the setting of an AFI between 5 and 10 cm (19). The diagnostic approach to IUGR should integrate information from maternal history and physical examination with information from sonographic evaluation of the fetus, placenta, and amniotic fluid. Hence monitoring the AFI has become a standard of antenatal care.

Conclusion

Fetuses in IUGR group had a statistically significant lower median value of AFI compared with non IUGR group. Findings at AFI evaluation should be combined with other clinical and ultrasound assessments for optimal interpretation of their significance and for management of the pregnancy.

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Popular Medicine and Issues Related to Religiosity in the Brazilian Medical Training

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Abstract

The present study analyzes the socio-historical influence from the colonization until the present day in the medical training in Brazil. It focuses on religiosity and its healing rituals. This is an exploratory and documental study, which looked as secondary sources monographs, theses, published original works, and books. The results demonstrated the influence of colonization in the formation of medical schools in Brazil, pointing to the need to recover many practices of Brazilian culture, approaching disease and ways of healing and maintenance of health, in the construction of a medicine more contextualized. The valuation of subjectivity and spirituality, has a significant role in the training of new medical professionals. The issue of health in collective and secular space requires a deepening of the historical construction, so that it becomes an integral medicine, adopting a multidisciplinary perspective, considering its social dimension. A medicine where practice can be consistent with the reality of the context where they apply. Therefore, the medical school of Cariri, has been expanding methods of approach and therapy through multidisciplinary actions that open new perspectives of intervention in the fields of individual and collective health.

Key words: Religiosity, Healing, Health.

Introduction

The City of Barbalha, in the Cariri Region of Ceará, is characterized by a rich contribution of Afro, Indian and European religious traditions. Working in the area of collective health, it helps to get in touch with the cultural diversity of the region, which is reflected in the plurality of religious conceptions and popular practices of healing present there.

The new curriculum of the medical course of the Federal University of Cariri, brought the possibility of knowledge of the medical-anthropological presuppositions, through the Community Health course, that took place in an extension project called "Community health care", implemented in the Cariri Region in the City of Crato. It provided the creation of a research line, with several projects already carried out and also the project of initiation to teaching, entitled Medical-anthropological Approach in Community Health aiming to deepen the popular vocabulary of diseases and therapeutic itineraries.

Thus, we give special focus to popular practices such as phytotherapy, pilgrimages, prayers and others.

In this perspective, we elaborate the present study whose central theme is the influence of the religious beliefs in the conceptions of health and disease. From this focus, we aim to investigate the development of medicine in Brazil, and its impact on medical profile design to meet the population today. The study will extend from the time of colonization to the present day, relating the process experienced by medicine in Brazil with the broader process of evolution of medical thinking in the various human civilizations.

Religious beliefs and their influence on conceptions of health and disease

Soares[1], studying the indigenous culture of Brazil colony, affirms that the knowledge, contents and beliefs of the natives were permeated by a polysemic cosmology, in which diseases were considered as manifestations of beings of nature, and the cures performed with plants and pray. Leloup[2], points out aspects of religious syncretism among Brazilian natives.

At the time of colonization, Brazil had few doctors, so that lay trustees exercised their craft under the aegis of the Christian faith, coming from Portugal and Europe. The disease was seen as a consequence of sin and the apothecaries and charity wards the greater focus of attention of the Jesuits was the sinful soul, not the body of the patient itself[1]. The Africans, in turn, took care of themselves according to the traditions of their ancestors, evoking the aid of spiritual forces. Afro culture has left a marked influence on the panorama of the religions of Brazil, also mixing indigenous beliefs and Catholicism in the interpretations of health and disease.

From the eighteenth century, by the legal determinations of Lisbon the care with the questions related to the public health of the Colony, were in charge of the commissioners sent by the Crown and the Senate of the Citys. And, towards the end of the century, The National Academy of Medicine began to wage a real battle against native thieves and healers in an attempt to discredit them in public opinion in order to obtain from the state the repression of therapeutic activities considered illegal in favor of their science[1].

It can be observed that the antagonism between the Court's official medicine and the popular practices of healing was therefore influenced by the class structure of Brazilian society in the relation of domination established between these classes. On the other hand, this struggle is impregnated with the history of scientific rationality in humanity, the source of contemporary Western medical rationality. The denial of the influence of sociocultural aspects of the disease and healing, from the adoption of the scientific paradigm as a criterion of truth, gave rise to prejudice against the popular knowledge socially constructed.

This non-dialogical view still tries to guarantee its hegemony in Brazil and in other countries, emphasizing the biomedical model as a unique reference in the approach to health and disease. It is a reductionist view that ignores the complexity of the interrelations between the biological, sociological, economic, environmental and cultural involving human sick. The reasoning in the mechanistic paradigm of Newtonian physics, already settled, but still steeped in medical mentality has led to Official Medicine to exclude from their conceptions and practices, human dimensions, among them the religion.

Confronting this paradigm, a movement arises among scholars from diverse areas, spread throughout the world, in order to rescue the integral vision of the human being with his individuality and complexity [3,4]. Nestler[5] a point out flaws in the traditional scientific medical training when ignores the multidimensionality and religiosity of man.

(...) People are bio-psycho-social-spiritual beings, which take place in the community of people and in the community of the peoples of the world (p.916) (...) Doctors resist spirituality and prayer for Human health because this was internalized during the process of its formation (p.904).

According to the author, neither does prayer need to be justified by medicine, nor medicine by religion. Religion would be closely linked to the biological constitution of the human being. The author points out that, through the use of tomography (SPECT), it was evidenced that during the religious experience of prayer, the areas of the frontal lobes, which govern the attention, enter into greater activity[5]. Cites research conducted in the US, indicating that spiritual and religious beliefs have a positive effect on patients' health. The results also show that doctors are less religious than the general population.

We will use in this study the term spirituality to refer to the religious search of man, as being, endowed with spirit. Defined in this way, spirituality does not necessarily imply faith in a personal deity, in the style of the Judeo-Christian God. States that the tendency of human beings to religion and spiritual experience is inscribed in our genes and that the search for meaning and meaning is one of the fundamental needs of the human being, which distinguishes it from other species. In addition, he notes that recent studies at Harvard Medical School have shown that beliefs have physical repercussions and play an important role in the prevention and treatment of diseases[5].

This thought is a part of a new emerging paradigm, which has brought new perspectives of understanding the health-disease binomial, with implications for the training of today's medical professional. Thanks to this movement, there are profound changes in undergraduate medical curricula in several universities around the world.

According to the American Medical Association, at least 19 US universities, including Harvard, already have similar courses to discuss the spirituality-health relationship so that students can see how religions influence decisions about topics such as control Birth, euthanasia and blood transfusion, among others.

In a recent research, Freire and Moreira[6] demonstrated that clinical listening in psychotherapy and psychiatric and psychological care in Brazil are populated by people who seek to associate with psychological and medical help, other forms of help, especially spiritual help. They affirm that spirituality is a striking and fundamental characteristic of the culture of our country and that, in the conceptions of health and illness of the Brazilian people, "scientific explanations are intertwined with mystical formulations. Religiosity and psychopathology overlap in such a way that it is difficult to identify the boundaries between one and the other, where the psychopathological experience ends and religiosity begins, and vice versa. "(p.94).

According to the authors, the Brazilian reality demonstrates not only the proliferation of religions, but also their syncretism. In addition to Christianity, which encompasses religions of all shades, there are Buddhism, Messianism and other Eastern philosophical-religious systems, Jehovah's Mormons and Witnesses, Islamic and Jewish fundamentalism, spiritualism and Afro-Brazilian cults such as Umbanda And candomblé.

In this context, the establishment of a socially adequate medicine must necessarily take into account the complexity and uniqueness of human suffering[4], including its relation to spirituality. The medical professional to be trained needs to become familiar with these issues, so that, in our country, the institution of disciplines involving spirituality in the medical curriculum is already a reality.

The medical school of the Federal University of Ceará took a step ahead of the other courses in Brazil. It is the first Brazilian university that has in the medical degree a discipline on spirituality. Created in 2004, the optional discipline Medicine and Spirituality that appears in the curricular grid, brings concepts such as spirituality and religion, relating topics such as health, prayer and faith; Self-care; Oncology and spirituality, among others. "Spirituality is part of people's lives and medicine can no longer ignore this," says Sergio Felipe de Oliveira, a specialist in medical practice and researcher at the Institute of Medical Sciences of the University of São Paulo (USP). For the author, religious practice can function as a supplement and can be associated with different types of treatment.

The aim of this study was to understand the medical training as a social and historical construction, investigating the evolution of medical thinking in Brazil, from colonization to the present day, focusing on the relationship religious and healing. For that, it was necessary to: A) Map the trajectory of Medicine in Brazil, establishing relations with the evolution of medical thought in the various human civilizations; B) To analyze the influence of the socio-historical context in the construction of Brazilian medical thinking from the colonization to the present day; C) Identify religious magical conceptions of diseases, popular knowledge and practices of healing and their relation with the Official Medicine in Brazil; And d) Investigate the relationship between spirituality and medicine in medical courses in Brazil and in the world today.

This exploratory work, intended to provide an overview and an approach to the subject in focus, bringing out basic data that could support to carry out further studies of the subject on schedule[7].

The bibliographic study had data obtained through:

- Primary sources: original works with original knowledge and published for the first time by authors, such as monographs, university theses, books, technical reports and articles in scientific journals.
- Secondary sources: bibliographic review articles and textbooks.
- Tertiary sources: categorized indexes of primary and secondary works, with or without a summary, bibliographic databases and bibliographic lists.

In order to develop the analysis of the thematic in focus, we organize files from all the collected documentation, with reading cards, constructing tables of authors and key terms, added of comments or observations related to the research questions.

We tried to describe the instruments and means of performing the content analysis, pointing out the course in which the decisions were taken regard-

ing the techniques of document handling: from the organization and classification of the material to the elaboration of the categories of analysis.

The historiography perspective was adopted in this study in an attempt to understand the socio-historical dimension in which the scientific production under study was constituted.

An organization chart of the History of Medicine was elaborated with respect to healing practices in the world and in Brazil.

From the organizational chart, the study was carried out on Eastern Medicine, in its Ayuvérdica and Chinese aspects, and on the beginnings of Western Medicine, mainly based on references: Cadwell[8]; Nestler[5]; Ribeiro[9] and Urban[10].

Afterwards, the History of Medicine in Brazil, from the pre-colonial period, was studied, emphasizing the miscegenation between the indigenous, Afro and Portuguese cultures, main references: Soares[1]; Araújo[11]; Camargo[12]; Cardoso[13]; Cruz[14].

To begin the study of the aspects of education and its relation with culture in Medical Education, we focus on references: Charlot[15] and Gramsci[16]. Both bring concepts of culture, knowledge, how knowledge is transmitted, the formation of schools, and the relationship between class structure and its influence on the transmission of knowledge.

The most specific study of the Medical Formation was based, mainly, on the references: Gallan[17]; Koifman[18]; Cerqueira[19] and Cruz[14].

Results and discussion

The research showed that the ancient Oriental civilizations developed a natural medicine that is based on the harmonious relationship between man and nature. Although the philosophy of Natural Medicine has apparently originated in Greece, it actually predates Hippocrates. Greece received knowledge of ancient India, since there was considerable cultural exchange between these peoples.

For about 6,000 years, in India, the oldest known Ayurvedic Medicine has been developed, which consists of a complex system of health care, involving detoxification, diet, physical exercises, use of herbs and techniques for Mental and emotional improvement. It is more about a lifestyle than an occasional treatment.

Chinese Oriental Medicine has a rather simple, yet deeply symbolic, language. The notion of balance between the macrocosmos (universe) and the microcosm (man) translates the health of the individual. In this view, emotions are natural in humans and it is healthy to feel them, in their fullness, in each moment.

However, when one or more emotions exacerbate or become a constant, this ends up causing an imbalance in one of the meridians (energy pathways in our body), and may even lead to a physical injury to the organ associated with that meridian. Based on this principle, acupuncture, moxa, massages such as do-in and shiatsu, as well as phytotherapy, hydrotherapy and breathing exercises such as tai-chi-chuan are proposed. Hygiene rules, sexual procedures, meditation and dietetics are also advocated, which cure illnesses by restoring the vital flow.

The doctors of ancient China were expert philosophers and their reason for living was based on the concepts of harmony and balance. His work consisted in restoring harmony between man and the order of the universe according to the natural laws that govern everything[5,8].

The research noted the initial and important influence of Hippocrates in the redirection of Medicine as a set of scientific disciplines, dissociating itself from supernatural forces. From the School of Kos, in Greece, 5th century BC., was established in the West the principles of Medicine based on the body, the systematization of diseases and the Medical Clinic.

At the heart of Hippocratic Medicine is the conviction that diseases are not caused by demons or supernatural forces but are natural phenomena that can be scientifically studied and influenced by therapeutic procedures and the judicious conduct of life of each individual. Thus Medicine should be exercised as a scientific methodology, based on the natural sciences, covering both prevention and diagnosis as therapy[3].

From Hippocrates, the basis for medical practice and teaching was formed in the West and later, through the Portuguese, in Brazil. Medicine became a science increasingly disconnected from beliefs and religious faith, following the path of the method of scientific experimentation.

This reality was evidenced at the apogee of capitalism and scientific rationality in the 19th

century that modified the scale of values in medical formation, leading to rupture with aspects of human subjectivity such as spirituality.

These sociohistorical aspects determined the direction of the development of medical education in Brazil. The Portuguese colonization in the sixteenth and seventeenth centuries left deep marks in the popular practices of healing practiced by the first inhabitants of Brazil. In addition to the religious magic conceptions and cures practiced by the Indians and Afro-Brazilians, popular medicine was practiced by surgeons and barbers, as they were called those who knew how to heal and bleed and these were few, with low socioeconomic conditions and little schooling. Until the middle of the nineteenth century, there were still few doctors with academic training in Brazil. Due to the metropolis's ban on the establishment of university education in its overseas domains, only the literate segments of the colonial elites had sufficient resources to fund the formation of some of their children in European universities[1].

Doctors who graduated abroad not always returned to Brazil immediately after completion of the course, and those who returned, worked with the privileged classes which were part.

In the nineteenth century, with the creation of medical schools in Rio de Janeiro and Bahia, the number of doctors trained in Europe declined. And, despite the training of doctors here, the problem of reduced numerical effectiveness continued. Allied to this, the fact that society does not give sufficient legitimacy to medical knowledge to ensure them a monopoly on competence in the field of curing disease.

The disease and the cure had specific meanings based on beliefs and syncretic religion of the people. This fact led the sick to seek other ways to the preservation and restoration of health, regardless of the absence or presence of doctors. Treatment of illnesses was usually conducted by the patient's own family members. Among the devotees of the Catholic faith, who was almost always near the dying man's bedside in the dying moments was the figure of a priest and not a doctor. Often, the disease was considered the fruit of sin or the devil's tricks, healing depended on God's will, not of drugs[1].

The black people, for their part, took care of themselves according to the traditions of their ancestors, evoking the help of spiritual forces that they worshiped in their countries of origin. For them, the power of healing was an attribute of those who possessed the gift of communication with the ancestral spirits.

Faced with this reality, the legal determinations of Lisbon, were that care with the issues related to public health of the Colony, be in charge of the Commissioners sent by the Crown and the Senate of the Municipal Council. And at the end of the nineteenth century the National Academy of Medicine began to wage a real battle against native thieves and healers in an attempt to discredit them, together with public opinion, to obtain from the state the repression of therapeutic activities considered illegal in favor of his science.. Soares[1] (p.417).

In 1910, Abraham Flexner held the first major review of medical education in the United States. Although he has reformulated and modernized medical education, he has given him mechanistic, biological, individualizing and specialization characteristics, with an emphasis on curative medicine and exclusion from alternative practices.

The purpose of the evaluation was to give medical education a sound scientific basis. The result was the publication, in 1910, of the Flexner Report[18]. This served as the basis for medical education in the United States; It establishes rigorous guidelines to which it is obeyed until today, and that have reflexes in several other parts of the world, including in Brazil, where by orientation of the Federal Government, followed the Flexnerian model in the public universities from the period of 1950 to 1971 .

With the University Reform (Law no. 5,540 / 1968), implemented during the military government, the separation between the so-called basic and the vocational curriculum became official, changing the internal dynamics of the curricula[18].

In 1988, the National Health System (SUS) was approved by the new Constitution, which legally ensured the following principles: integrality of actions, balance of general-specialized knowledge, social determination of the health-disease process, interdisciplinary work, use of technology and inclusion of suitable alternative medicines said practice[18].

As can be seen, the hegemony reached by the biomedical model in the Western world in Brazil, in particular, had the influence of the class structure of Brazilian society, in the relation of domination established between these classes, a process that began in the process of colonization. On the other hand,

this question is embedded in the very history of the construction of scientific rationality in humanity and contemporary Western medical rationality.

Nestler[5] cites research conducted in the USA, indicating that spiritual and religious beliefs have a positive effect on patients' health.

Since 1994, American colleges have begun to include components of spirituality in their teaching in order to teach the student to collect elements of spirituality as part of the clinical history, to research the existing literature on the importance of spirituality for health care, to present cases where spiritual beliefs affected patients. In this sense, they come to recognize spiritual counselors as an integral part of the clinical body, motivating students to see their own belief systems, assessing how they can help or hinder the doctor-patient relationship. New disciplines arise to introduce theoretical notions about the major religious traditions, emphasizing its relationship with medicine and its importance for the decisions in the health field[20].

While the biomedical model has little to say about the human suffering and does not take into account the psychic dimension and religiosity in the formation of disease, emerging trends call for the inclusion of the mythical character, interpretation of human sick. This moment points to a new paradigm.

In this approach, it is no longer possible to consider the western medical tradition as a single frame of reference, from which other medical practices should be evaluated. It is considered today that there is a logic embedded in each medical model, which must be analyzed in the social context where it is inserted. In addition, these models should be understood historically and compared to each other.

Under the prism of the new paradigm adopted in medicine, which considers the complexity and uniqueness of human suffering[21], Brazil has sought new perspectives in the approach to health and disease. From the 1988 Constituent Assembly, a redefinition of models for the Basic Health Care Sector in Brazil started, with the creation of the SUS.

In 1993, the Federal Government implemented the Family Health Program, which guarantees, in addition to SUS assumptions, community work, territorialisation of health practice, solubility in primary health care (APS) and Education[18].

But the question is whether this movement - which implied a change in the official discourse about medical practice - was reflected in terms of modifying the curricular structure of the medical schools in Brazil. In fact, the division of the medical course into several disciplines closely bound up in a biologist view, the great emphasis given to specialties, overly theoretical teaching, and the training undergone by the faculty contribute to the physician being instructed in order to conceive fragmental the health-disease relationship[18].

Thus, there was a need to redirect teaching and medical practice, in order to consider the integral view of the patient, with the medical professional being committed not only to treatment but to health promotion. This integrality involves the approach of the individual as a whole, body and mind, in addition to its relationship with the environment, which also includes religiosity.

In 2001, the Federal University of Ceará, innovatively launched a new curriculum for medical school, in order to promote the humanization of medical practice. According to the National Guidelines for Medical Undergraduate Course, the profile of the trainee graduate / professional should be: Doctor with generalist, humanist, critical and reflective. Qualified to act, based on ethical principles, in the health-disease process in its different levels of attention, with actions of promotion, prevention, recovery and rehabilitation to health, from the perspective of integrality to assistance, with a sense of social responsibility and commitment to citizenship, as promoter of integral health of the human being.

The medical course of the Federal University of Ceará (UFC), in Fortaleza, also took a step ahead of other courses in Brazil, inaugurating in 2004 the optional discipline Medicine and Spirituality, which brings concepts such as spirituality and religion, and addresses topics involving health, prayer And faith; Self-care; Oncology and spirituality, among others. In this way, the UFC is the first Brazilian university that has in the medical degree a discipline on spirituality.

Spirituality is part of people's lives and medicine can no longer ignore this, says Sergio Felipe de Oliveira, a specialist in medical practice and researcher at the Institute of Medical Sciences of the University of São Paulo (USP). For the author the religious practice can function as a complement to the various existing treatments.

Conclusion

The results shows the influence of the colonization process in the formation of medical schools in Brazil and point to the need of the Brazilian cultural syncretism rescue the approach to health and disease and build a contextualized medicine, in which subjectivity and spirituality assume a significant role in the medical professionals training.

The question of health in the collective space therefore requires the deepening of the search for the historical construction of an integral medicine, which adopts a multidisciplinary perspective, and considers the social dimension. A medicine whose policies are consistent with the reality of the context in which they apply. The increasing openness to a plurality of healing models and preventive actions in community health requires studies and research aimed at understanding aspects pertinent to the cultural conceptions and practices of approach to health and disease.

From this reflection, the current medicine trend is to reincorporate the socioanthropological vision of the man, including religiosity in the conceptions of health and disease, making resurgence of old procedures that add to the modern technological resources. In this sense, methods of approach and therapy have been broadened through interdisciplinary actions that open new perspectives for intervention in the field of individual and collective health.

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Problems Affecting Women Over 65 with Incontinence and Their Self-Management

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Abstract

Introduction: To evaluate the problems of women over 65 years with urinary incontinence and their self-management strategies.

Materials and Methods: This descriptive study was conducted between November 1 and December 20, 2015, at four Family Health Centers in a city in the Eastern Black Sea Region, Turkey. One hundred seventy-seven women participated in the study.

Results: Difficulties experienced due to incontinence were 96% unhappiness, 80.2%constant urine smell due to not changing briefs frequently, 95.4% loss of social life, 90.9% unable to use a pad, 50.8% feelings of disturbing the household or other individuals, 87% dizziness or a fall due to orthostatic intolerance, 63.2% feelings of others' imperceptions about the situation, 82.4% insomnia, 72.3% lack of assistance, 84.1% unable to afford urine protection briefs, 66% loneliness, 84.1% dependency, 77.4% lack of support, and 87% have difficulties getting out of the house. The selected self-management strategies were using handmade materials for a pad (50.2%), finding a toilet before needed (64.9%), changing clothes frequently (37.8%), planning activities to stay near a toilet (37.8%), changing bed linen frequently (41.8%), staying at home more (87.1%), avoiding long travel (91.4%), not drinking water after dinner (82%), and using a night light (82.9%).

Conclusion: It was found that there were many unsolved issues at the individual and community level that affected the quality of life of women with incontinence.

Keywords: Family Health Center, Problem, Incontinence, Women, Age

Introduction

Among elderly women, urinary incontinence is a prevalent and costly condition. The majority of incontinent patients had substantial cognitive impairment, age-related anatomic disorders, and limitations in mobility. Urinary incontinence is defined as an involuntary leakage of urine, urinary incontinence (UI) causes social and hygienic problems[1-2]. It is twice as common in women as in men and affects at least 1 in 3 older women. It is not a normal result of aging. Rather it is a medical problem that is often curable and should be treated. Leakage of urine in public is one of the most miserable incidents in social life for adults. This situation associated with leakage is severe and it may induce a feeling of embarrassment, alienation, isolation, or depression. Urinary frequency or urinary incontinence affects a person's relationships both with the surrounding people and society as a whole. It is analyzed into three groups as stress, urge and mixed incontinence[1-5]. The bladder and sphincter integrity is essential to maintain normal continence in men and women. However, urinary incontinence in women is globally more common in women due to childbirth, prolapse, recurrent urinary tract infections etc.[3-7]. While the prevalence rate among women is reported to be 9% - 72% in Turkey, it is 8% -34% in the world[8-10.] Urinary incontinence prevalence increases with age in parallel and affects about one out of three women over the age of 70[11]. In addition to the physiological health problems increasing with age, urinary incontinence that prevents social and psychological activities of the elderly causes them to be isolated from the society and to have further deterioration in their health[12,13]. Difficulties of urinary incontinence do not known in the elderly in this country. Urinary incontinence that has high health costs still appears to be anupdated problem in our country especially in the women. Accompanying the growing number of problems related to aging, incontinence affects women's lives. In this direction, this study was conducted to evaluate the problems of women over 65 years old with urinary incontinence diagnosis.

Materials and methods

Study Design and Settings

This study was conducted using a descriptive design between November 1 and December 20, 2015, at four Family Health Centers in a city in the Eastern Black Sea region. All individuals in Turkey were registered at a Primary Health Care Center. People were provided with preventive health services based on this registration, and the records were updated every 6 months. Healthy women residing in the region where the study was conducted were found using these up-to-date registries. The study included all women over 65 years with incontinence who consented to participate in the study. The four Family Health Centers in the city center were primary, consultant, and teaching health care serving a population of approximately 10,000 in Trabzon.

Sample Size and Sampling

At the four centers, 203, 107, 178, and 180 women over 65 years were registered, and 262 had incontinence diagnosed at least once and had an ongoing complaint. One hundred seventy-seven women participated in the study.

Data Collection

A standardized structured data collection tool was used to collect associated factors such as demographic and general subject characteristics. All data collection forms were completed by the researchers. Data were collected through face-to-face interviews at each primary health center. The data were collected through a 40-item questionnaire, which was prepared by the researchers on the basis of related literature. The questions determined demographic features of the women, presence of UI, and distribution of the problems[10-12]. Before the questionnaire was used in the actual study, it was piloted with a group of 10 women. The researchers also calculated the body mass index (BMI). Women with a BMI $\geq$ 30 kg/m^2 were considered obese.

UI was defined as any leakage or involuntary loss of urine during the 4 weeks prior to the study. Stress urinary incontinence was defined as involuntary urinary loss precipitated by coughing, sneezing, physical exertion, etc. Urgency urinary incontinence was defined as involuntary urinary loss preceding the urge to void or uncontrollable voiding with little or no warning. Women experiencing both stress and urge incontinence were determined to have mixed urinary incontinence[9,11].

Data Analysis

Data were analyzed with the Statistical Package for the Social Sciences (SPSS), version 20 for Windows. Descriptive statistics (percentages, frequencies) were used to analyze the socio demographics of women, their problems, and their self-management strategies for incontinence-related problems. Data were analyzed using the $\chi^{2\ test}$ and p values <0.05 were considered significant.

Ethical Considerations

Ethical approval was obtained from the Ethical Committee of Local Hospitals (Protocol code: 15-2011). Written permission was obtained from the Family Health Centers. Written informed consent was obtained from each participant.

Results

Data obtained from 177 women were analyzed. The socio demographic and medical characteristics of the participants (n=177) are displayed in Table 1. The average age, parity, and age of menopause for women participating in the study was 67.0±1.4years (range 65–72), 3.05 ± 0.04 (range 0–5), and 44.5 ± 2.1years(range 40–55), respectively. Most of the participants were primary school graduates (66.6%), had a deceased spouse (45.7%), lived in a large family (44.4%), had their own room (66.6%), had income (98.3%), had vaginal delivery (82.4%), and could achieve self-care (83.0%). Data regarding general health conditions revealed that 74.5% of the participants had mixed incontinence, 87.5% had incontinence problems for 11–15 years,57.1% used antidepressants and heart medication, 25.4%had urinary fecal cases,82.0%had bladder training at least once,89.8% did not take Kegel exercise application,95.4% did not have a bladder diary calendar or control training programs, 30.5%had a hysterectomy for prolapse,26.5%had surgical treatment, 74.5% were treated for lower urinary tract infection at least twice,69.4%went to a doctor to control blood pressure in the last 3months,76.2%could not go out alone, 100% had at least one chron-

ic disease, 88.7%had constipation complaints, 23.1%had chronic cough,44.0%fell due to sudden rising for the toilet, and 28.2% were overweight (Table 1).

Table 1. Sociodemographic and Medical Characteristics of Participants (n=177)

Characteristics	**Mean±SS**	
Age (min: 65, max: 76)	67±1.40	
Parity (min: 3, max: 5)	3.05±0.04	
Menopause age (min: 42, max: 47)	44.5±2.12	
	n	**%**
Education Level		
Illiterate	17	9.6
Primary School	118	66.6
High School	33	18.6
University	9	5.2
Income Status		
Yes	174	98.3
No	3	1.6
Is spouse alive?		
Yes	18	10.9
No	159	89.8
Family Structure		
Nuclear	99	56.0
Large	78	44.0
Having her own room		
Yes	118	66.6
No	59	33.3
Meeting the Self-Care Needs		
Yes	147	83.0
No	30	17.0
Incontinence Type		
Stress	5	29.0
Urgency	40	22.6
Mixed	132	74.5
Duration of illness		
5-10 years	4	22
11-15 years	154	87.0
16-20 years	19	10.8
Drug Use		
DiureticsAntidepressants	42	23.7
Diuretics+Antidepressants+ heart	101	57.1
Diuretics +heart	34	19.2
Urinary fecal		
Yes	45	25.4
No	132	74.6
Incontinence treatment		
Yes	30	16.9
No	147	82.0
Kegel exercise application		
Yes	18	10.2
No	159	89.8
Surgical Treatment		
Yes	47	26.5
No	130	73.4
Bladder diary calendar/control training programs		
Yes	8	4.6
No	169	95.4
Hysterectomy due to prolapse		
Yes	54	30.5
No	123	69.5
Type of delivery		
Vaginal	146	82.4
Caesarean	31	17.5
Urinary tract infection diagnosis		
At least twice	132	74.5
At least four times	39	22.0
More than 4	6	3.3
The reason of seeing a physician in the last 3 months		
Blood pressure control	123	69.4
Analysis	52	29.3
For drug prescription	111	62.7
Did not see a doctor	42	23.7
Being able to go out alone		
Yes	42	23.8
No	135	76.2
Chronic disease		
At least one	177	100
2 the most	170	96.0
Constipation compliant		
Yes	157	88.7
No	20	11.3
Constant cough		
Yes	41	23.1
No	136	76.9
Falling due to toilet need		
Yes	78	44.0
No	99	56.0
BMI		
Underweight	12	6.7
Normal	17	9.6
Overweight	50	28.2

Difficulties experienced due to incontinence are presented in Table 2.The results indicated that99.5% of participants had experienced feeling unhappy, 67.1%constant urine smell,87.0% falling due to orthostatic intolerance, 87.2%loss of social

life, 89.7%inability to use a pad, 99.2% feelings of disturbing the household or other individuals, 87.5% dizziness or a fall due to orthostatic intolerance, 87.4% feelings of others' imperceptions about the situation, 94.3% insomnia, 72.4% lack of assistance, 84.7% inability to afford urine protection briefs, 66.1% loneliness, 84.1% dependency, and 87.0% difficulty going outside (Table 2).

Table 2. Distribution of Problems (n=177)

*Problems	n	%
Feeling of unhappiness	170	96.0
Constant urine smell	142	80.2
Loss of social life	169	95.4
Unable to use a pad	161	90.9
Feeling of disturbing household	90	50.8
Dizziness/Falling due to a sudden rise	154	87.0
Feeling of others' imperceptions about the situation	112	63.2
Insomnia	146	82.4
Lack of assistance	128	72.3
Unable to afford urine protection briefs	149	84.1
Frequent urination (to avoid incontinence)	175	98.8
Loneliness	117	66.1
Dependency	149	84.1
Lack of support for their problems	137	77.4
Difficulty getting out	154	87.0

**Multiple answers were given*

Table 3. Selected Self-Management Strategies (n=177)

*Strategies	n	%
Used handmade materials for pad	89	50.2
Find toilet before needed	115	64.9
Change clothes frequently	67	37.8
Plan activities to stay near toilet	67	37.8
Change bed linens frequently	74	41.8
Staying at home more	102	87.1
Avoiding long travel	107	91.4
Not drink water after dinner	96	82
Use a night light	97	82.9

**Multiple answers were given*

Selected self-management strategies are presented in Table 3. Participants reported self-management strategies for quality of life. Most of them selected using handmade materials for a pad (50.2%), finding a toilet before needed (64.9%), changing clothes frequently(37.8%), planning activities to stay near a toilet(37.8%), changing bed linen frequently(41.8%),staying at home more (87.1%),avoiding travel (91.4%), not drinking water after dinner (82.0%), and using a night light (82.9%) (Table 3).

Statistical analysis showed no significant relationship between problems of participants' examples and type of UI($\chi^2 = 0.926, p = 0.765$), education level($\chi^2 = 1.543, p = 0.511$), marriage($\chi^2 = 0.276, p = 1.450$), parity($\chi^2 = 1.79, p = 0.37$), menopauseage ($\chi^2 = 0.87, p = 0.981$),aging($\chi^2 = 0.62, p = 0.362$), and type of delivery($\chi^2 = 0.314, p = 0.156$). Statistical analysis detected a significant relationship between feeling unhappy and having their own room($\chi^2 = 1.52, p = 0.02$), duration of illness($\chi^2 = 1.675, p = 0.04$), drug use($\chi^2 = 0.543, p = 0.03$), urinary fecal cases($\chi^2 = 0.654, p = 0.03$), bladder diary calendar and control training programs($\chi^2 = 0.765, p = 0.01$), constipation complaints ($\chi^2 = 0.543, p = 0.03$), constant cough($\chi^2 = 0.986, p = 0.02$), and BMI ($\chi^2 = 0.675, p = 0.00$).

Discussion

UI is an important medical and social public-health problem for people with incontinence and for theirfamilies[11]. Although one-third of the women had urine leakage problem, 70.7% did not visit a physician for this complaint[12,13]. In our study, a few of the women went to a physician for their incontinence problem. In the literature, the main reasons reported for not visiting a physician were the hope for recovery of symptoms, shyness, hesitation to talk with a physician about the problem, fear of operation, and the assumption that it is a natural consequence of aging[14,15].

According to our results, the majority of women participating in the study had mixed incontinence. Previously, it was reported that the most common type of incontinence in the elderly was mixed type, and the proportion of the elderly seeing a physician for incontinence was very low (12%)[7,16,17]. In our study, it was determined that women had gone to the doctor at least twice for urinary tract infection, and meanwhile reported their incontinence problems. Briefly, women did not go to a doctor only for their incontinence problems. Therefore, the reason for the low rate of visiting a physician may be that the majority of women had a urinary tract infection. This may de-

lay the diagnosis and treatment of the disorder[18-20]. Hence, awareness of the importance of early diagnosis and treatment for UI should be increased. In the literature, many studies reported mixed UI as being more common than other types among elderly women[21]. This is consistent with the findings of this study. People who have incontinence but maintain an undisturbed life may be encouraged to seek health advice by informing them that this disorder is treatable and preventable[22].

In the literature, there are many studies showing that UI affects quality of life[7,22-24]. Our study is consistent with the previous results, and the vast majority of participants in our study stated that this situation greatly affected them socially, physically, and emotionally.

The efficacy of many therapies such as behavioral development of pelvic floor muscles, bladder calendar, and bladder training is supported by recent research[15-22]. The regular and constant practice of these therapies is of great importance due to their positive psychosocial effect on the lives of patients with UI. Health care professionals are very important for the education process of UI sufferers[22,24]. Our study showed that most of the women did not receive education for Kegel exercise or for bladder diary calendar and control training programs. In our study, it was found that women care an individual protection method more in struggling with incontinence.

UI affects the quality of life and thus the isolation dimension of an individual[7,19,21]. Similar results were also found in our study. Social isolation was reported as a significant result among the top incontinence-related problems[7,16,17].In our study, people expressed that they were unhappy living with incontinence problems and were isolated from other people, especially due to urine smell and feelings of disturbing other individuals.

In our country, the majorities of the elderly are not sent to nursing homes, and are instead cared for at home, in compliance with our culture[23-24] . All the participants with UI in our study group lived at home and complained about not having an assistant at home and people's perceptions about them. Women living with real solitude resulted from loneliness related to aging, reduced self-esteem, increasing dependency, and lack of support for their problems[22-23].

Insomnia due to incontinence increased dizziness and the risk of falling in this study. Studies suggest that people over the age of 65 years experienced an increased risk of falling due to chronic diseases[24,25]. The chronic diseases of the participants and drugs with diuretic features affected their incontinence problem negatively; thus, their sleep patterns were disrupted and sudden rising increased the risk of falling[24-25]. Participants believed the changes they made to their daily routines as a result of their incontinence were significant. In our study, women used self-management strategies for incontinence problems, such as not drinking water after dinner and using a night light.

Limitations of the study

The result of this study cannot be generalized to the whole country. This study was approved by the local authorities and four Family Health Centers in the city, and the necessary permissions were obtained. The women were informed by the researchers that they would not be paid for their participation in the study, and they did not receive any payment.

Conclusion

Although UI is a treatable condition, numerous women experience psychological, social, and physical problems. In this study, it was determined that most women were unhappy with their situation, and therefore they isolated themselves from social life. In addition, sleeplessness and urgent toilet need were seen as causes of falling risk. In accordance with this common problem in women, to facilitate daily life, it is obvious that regular home care training programs at an institutional level in our country are necessary. Nurses and midwives have an important role in the education of women regarding prevention of UI problems.

Clinical Relevance

This study demonstrated that there are numerous difficulties for women over 65 years with incontinence. These problems affect their quality of life. The daily life of women should be organized in line with these problems. They need to be supported by the medical staff at the Family Health Center so as to overcome these problems.

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Functional disability in the elderly people: systematic review

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Abstract

Purpose: To evaluate the current evidence on the social and biological factors correlated with functional disability in the elderly, formulating a systematic review based on published studies on this subject.

Methods: Systematic review from January 1998 to April 2014. The research was conducted with the descriptors: "health of the elderly"; "aging"; "disabled persons", and "disability".

Results: Age, race, body mass index <18.5, and morbid conditions, including congestive heart failure, peripheral artery disease, and diabetes mellitus were significantly related to the development of severe walking disability. Stroke was most strongly associated with mobility disability. More years of education was associated with lower probability of disability. Higher level of physical activity and lower energy intake would be protective against the development in activities of daily living and instrumental activities of daily living disability in older persons.

Conclusion: It is necessary to improve the implementation of pro-active aging policies, for the elderly and not elderly, as a way to prevent disability. We must expand access to health services for the elderly population, including a varied complexity of rehabilitation actions, in order to reduce disability and the consequent needs (current and future) of using the health services, especially the complex and costly ones, as hospitalization and home visits.

Key words: Disability evaluation; Aged; Review

Introduction

According to the World Health Organization (WHO), it is estimated that by 2025, Brazil will be the sixth country in the world in number of elderly, reaching the quota of 30 million individuals [1]. Disability rates are much higher among people with 80 to 89 years of age, the age of major growth worldwide, increasing by around 3.9% per year, which should represent 20% of the global population aged 60 or more by 2050 [2].

In accordance with International Classification of Functioning (ICF), the term "deficiency" corresponds to changes only in the body level, while the term "disability" would be more broad, indicating the negative aspects of the interaction between an individual (with a particular health condition) and the contextual factors (personal or environmental factors) [3]. Among elderly people, the highest prevalence of disability, and chronic diseases and comorbidities makes the demand for health care differentiate this population, when compared to the demand of other age groups [4]. Thus, the biggest challenge in the 21th century will be caring for a population of over 32 million elderly people, most of them with low socioeconomic and educational level, and high prevalence of chronic and disabling diseases [5].

Therefore, this study was based on the following guiding question: what are the updates from 1998 to 2014 on the impact of social and organic factors in functional disability in elderly patients? We consider that the functional disability in the elderly is an important public health problem that has gained notorious space in current scientific discussions, since it is a recurring problem with high incidence and prevalence due to the increase in population longevity, and we must provide readers a panoramic view on the subject. This review evaluated the current evidence on the social and biological factors correlated with functional disability in the elderly, formulating a systematic review based on published studies on this subject.

The hypothesis was that, despite the growing interest on the subject, social and organic factors correlated with disability were not well mapped, resulting in prejudice to effective affirmative action policies, that would be established in favor of preventing this problem, as well as the human element involved in geriatric care, which was not yet prepared to intervene in this case series.

Method

It was a systematic review in which the selection of studies was performed broadly through the *Biblioteca Virtual em Saúde* (BVS), which hosts recognized databases. The search was conducted with the descriptors: in English/Portuguese: "health of the elderly/*saúde do idoso*"; "aging/*envelhecimento*"; "disabled persons/*pessoas com deficiência*", and the keyword disability/incapacidade". The inclusion of the keyword in the research is justified because, although not cataloged in MeSH, this term is often used to characterize studies that deal with the subject of this review. The result led the search to Medical Literature Analysis and Retrieval System Online (MEDLINE) and Latin American and Caribbean Center on Health Sciences (LILACS) online databases. The period raised in the literature was from January 1998 to April 2014. The reason for defining the search for the period 1998-2014 was that the National Elderly Policy (NIP) was enacted in Brazil in 1994, with the publication of law 8,842/94, regulated by Decree No. 1,948/96, representing the first step in the recognition and importance of this population segment.

The compilation of data occurred from May to June 2014. First, the manuscripts' selection occurred by analyzing their titles and abstracts. After, the papers that were identified by the search strategy were independently evaluated by the authors, in line with the following inclusion criteria: (1) articles that had in their title at least one of the terms described in the search strategy; (2) texts written in English or Portuguese; (3) papers discussing the correlations of functional disability in the elderly with social and organic aspects; (4) original studies, with full text available through the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superio*r (CAPES- acronym in Portuguese), Journal Portal, a virtual library created by the Brazilian Ministry of Education and which content is restricted to authorized users. Exclusion criteria were: no original studies, as letters to the editor, prefaces, papers, thesis, reviews and editorials. Manuscripts were repeated on more than one databases were recorded only once.

Subsequently, each selected article was read in full, and important data for this review were collected and organized in a spreadsheet containing author, year, journal, sample characterization and main findings (Quadro 1). To establish a parameter to limit the age group covered in this review, we used the WHO's definition, that defines "elderly" based on the chronological age, characterizing as "elderly" that person aged 60 years or more in countries development, and who are 65 years or more in developed countries.

The research strategy in the BVS occurred in three phases. First, we crossed the descriptors "health of the elderly/*saúde do idoso*" AND "aging/*envelhecimento*", yielding a total of 132 articles, and 15 articles were selected. Second, we crossed the descriptors "aging/*envelhecimento*" AND "disabled persons/*pessoas com deficiência*", and we obtained 91 articles; then 12 were selected. Third, we crossed "aging/*envelhecimento*" AND "disability/incapacidade", obtaining 192 articles, and nine manuscripts were selected.

Chart 1. Characterization of the studies and main findings

Article	Journal	Sample	Study characterization	Main findings
Merighi et al. [1]	Revista da Escola de Enfermagem da USP	9 elderly women, aged 62-88 years	Qualitative study	The elderly women referred to their physical, mental, and social limitations. They evaluated the preservation of their autonomy in daily activities and in self-care, and considered their families to be a fundamental support. They had expectations of remaining healthy, pursuing leisure activities, and having improved access to healthcare information and treatment. The absence of prospects at this stage of life was related to the loss of significant people and the loss of health
Fialho et al. [4]	Cadernos de Saúde Pública	1,624 elderly patients (≥60 years) selected by representative sampling	Quantitative cross	IADL was only associated with hospitalization, while ADL was associated with hospitalization and home consultations. The findings showed increased use of health services (especially more costly ones) among older adults with disabilities, and that functional health dimensions have not oriented health services, still largely conditioned on the presence of diseases
Ramos [5]	Cadernos de Saúde Pública	Seniors, between 70-74 years, who figured in the study Epidoso	Descriptive study	Intervention measures to identify treatable causes of cognitive impairment and loss of independence in day-to-day priority should be health system's priority, with a programmatic restructuring perspective that really health and well-being of the growing elderly population
Lenardt et al. [6]	Acta Paulista de Enfermagem	195 older adults receiving care at a Basic Health Unit	Quantitative cross	Among the 195 subjects participating in the study, 73 had a decreased level of physical activity and were classified as being in a condition of pre-frailty for this component
Berlau et al. [7]	American Journal of Geriatric Psychiatry	216 non-disabled, prospectively followed participants who were aged 90 or older at baseline	Cohort study	The overall incidence of disability was 16.4% per year, and did not differ by gender. Disability incidence increased with age from 8.3% in the 90-94 age group to 25.7% in the 95 and older age group. Several factors were associated with increased risk of disability including history of congestive heart failure, history of depression, poor self-rated quality of life and cognitive impairment

Harvey et al. [8]	Journal of Cross-Cultural Gerontology	African-American females and non-Hispanic white females, aged 60 and older, who participated in all 3 waves of the survey (n=671)	Exploratory study	African American women reported having higher levels of chronic conditions ($p<0.01$ Wave I; $p<0.0001$ Wave II – III) and functional limitations across their life span, compared to non-Hispanic white women ($p<0.0001$ Wave I; $p<0.05$ Wave II; $p<0.01$ Wave III)
Hirsch et al. [9]	Age and Ageing	5,888 persons aged 65 and over recruited from four communities in the United States: Sacramento County (CA); Allegheny County (PA); Forsyth County (NC); Washington County, Maryland and Africa	Cross-sectional study	Participants' age averaged 79.4 in 1998–99; 1,901 died over 7 years. Compared with the lowest change quintile in stride length, the highest quintile had a 1.32 RR of ADL disability (95%CI: 1.16-1.96) and a 1.27 RR of death (95%CI: 1.07-1.51). The highest change quintile for grip strength increased the risk of ADL disability by 35% (95%CI: 1.13-1.61) and death by 31% (95%CI: 1.16-1.49), compared with the lowest quintile. The annual change in stride length and grip strength also predicted disability in mobility and upper-extremity function
Hung et al. [10]	Medical Care	10,390, 10,621 and 10,557 community dwelling adults aged 65 or more in 1998, 2004, 2008	Cross-sectional study	Over time, the relationship of chronic diseases and impairments with disability were largely unchanged; however, the association between hypertension and complex ADL disability weakened from 1998, to 2004 and 2008, as it did for hypertension and self-care disability. The association between diabetes and self-care disability strengthened from 1998 to 2004 and 2008, as it also did for lung disease and self-care disability
Mocchegiani et al. [11]	Age	Persons aged 80 years or older (n=346)	Cross-sectional study	CZr showed significant and stronger relationships than Cu or Zn alone with all baseline physical and functional measures in models that did not include adjustments for inflammatory parameters. CZr was also associated with physical decline, measured as Short Physical Performance Balance ("SPPB%) decline" at 2 years of follow-up and mortality at 4 years of follow-up. Subjects in the high CZr tertile had a higher risk of death with an adjusted hazard ratio of 1.92 (95%CI: 1.12-3.29; $p=0.02$)

Barry et al. [12]	American Journal of Geriatric Psychiatry	754 persons, aged 70 years or older	Prospective cohort study	Depressed participants were more likely than those who were non-depressed to transition from a state of no disability to mild and severe disability, and from a state of mild disability to severe disability; and were less likely to transition from a state of mild disability to no disability and from a state of severe disability to no disability
Chan et al. [13]	Journal of Gerontology	1,359 community dwelling older adults drawn from Wave 1 of the Australian Longitudinal Study of Ageing	Cross-sectional study	Individuals receiving support from (1) informal sources only and (2) both informal and formal sources had weaker relationships between disability and depressive symptoms, relative to those receiving no support. The interaction between informal and formal support and disability also revealed that for individuals with above average functional limitations, receipt of this support type was associated with fewer depressive symptoms. However, for individuals with no functional limitations, receipt of both informal and formal support was not associated with depressive symptoms. The stress-buffer age variation hypothesis received no support
Cooper et al. [14]	Journals of Gerontology Series A: Biological Sciences and Medical Sciences	1,532 men and women participating in the Longitudinal Aging Study Amsterdam and not living in an institution in 2005–2006	Cohort study	The association between lower physical performance levels and increased odds of functional decline was modified by investment in independence, with a weaker association found among people with higher investment in independence scores than in people with lower scores even after adjustment for covariates. The association between lower physical performance levels and higher odds of institutionalization was marginally weaker among those people with above median levels of mastery (test of interaction p=0.08). In men, an association between general self-efficacy and functional decline was found and maintained after adjustments
Laroque et al. [15]	Revista Gaúcha de Enfermagem	6 elderly people participating in a group of a Basic Health Unit	Qualitative, Exploratory and Descriptive study	Seniors have information about sexually transmitted diseases but they also had evidence of noncompliance with condom use
Qu et al. [16]	American Journal of Physical Medicine & Rehabilitation	2,429 persons, aged 70 or older with one or more ADL or IADL-only activity limitations	Cross-sectional study	Musculoskeletal impairments accounted for over 1/3 of all perceived causes. The odds of having any ADL limitations for persons whose limitations were attributed to musculoskeletal impairments and to brain or behavioral impairments were, respectively, 2.12 times and 3.00 times the odds for the reference group of cardiopulmonary and hematology impairment

Oliveira et al. [17]	Revista de Terapia Ocupacional da Universidade de São Paulo	19 elderly, being 10 participants and 9 non-participants in activities related to church	Cross-sectional study and exploratory.	Older participants in these activities had a mean operating time of 23.62 years. These women was younger, had more years of schooling, better cognitive performance, lower prevalence of self-reported diseases, falls and fear of falling, and better functional performance when compared to non-participants. There was a significant correlation between years of participation in the activities with age (r= 0.579) and cognitive performance (r=0.467)
Santos et al. [18]	Escola Anna Nery Revista de Enfermagem	Participants of UnAti-UERJ	Qualitative study	The people in the group do not consider themselves old, as the cultural and social discrimination do; the nurse image attributed only to physical care was demystified, building up the concept that self-care/aging is the search for another dimension of living
Balzi et al. [19]	Age and Ageing	897 subjects aged 65-102 years from the InCHIANTI study, a population-based cohort in Tuscany (Italy)	Cross-sectional study	The baseline prevalence of ADL disability and IADL disability were, respectively, 5.5% (49/897) and 22.2% (199/897). Of 848 participants free of ADL disability at baseline, 72 developed ADL disability and 25 of the 49 who were already disabled had a worsening in ADL disability over a 3-year follow-up. Of 698 participants without IADL disability at baseline, 100 developed IADL disability and 104 of the 199 who already had IADL disability had a worsening disability in IADL over 3 years. In a fully adjusted model, high level of physical activity compared to sedentary state was significantly associated with lower incidence rates of both ADL and IADL disability at the 3-year follow-up visit. After adjusting for multiple confounders, higher energy intake (OR for difference in 100kcal/day: 1.09; 95%CI: 1.02-1.15) and hypertension were significant risk factors for incident or worsening ADL disability

Buchman et al. [20]	Arthritis Care & Research	898 older persons from the Rush Memory and Aging Project without dementia, stroke or Parkinson's disease at baseline	Cross-sectional study	Average follow-up was 5.6 years. Using a series of proportional hazards models controlled for age, sex and education, the risk of IADL disability risk increased about 10% for each additional painful area reported; the risk of ADL disability increased about by 20% for each additional painful area; the association with self-report mobility disability did not reach significance. However, risk of mobility disability based on gait speed performance increased about 13% for each additional painful area. These associations did not vary by age, sex or education and were unchanged after controlling for several potential confounding variables including BMI, physical activity, cognition, depressive symptoms, vascular risk factors and diseases
Davey et al. [21]	Experimental Aging Research	244 centenarians and near-centenarians	Cross-sectional study	The profound ranges of functioning in this age group and indicates considerable differences as a function of each dimension. Bivariate models generally suggest that cognitive functioning and physical performance is higher for: men than women; whites than African Americans; community than facility residents; those with more than high school education than those with less than high school education. Multivariate models elaborate that differences in educational attainment generally account for the largest proportion of variance in cognitive functioning and residential status generally accounts for the largest proportion of variance in physical performance measures
Jung et al. [22]	Journals of Gerontology Series A: Biological Sciences and Medical Sciences	Older adults aged 70-79 years	Cohort study	Engagement in productive activities at baseline was associated with lower cumulative odds of frailty 3 years later in unadjusted models (OR: 0.74; 95%CI: =0.58-0.96) but not after adjusting for age, disability, and cognitive function (adjusted OR: 0.78; 95%CI: 0.60-1.01). Examination of productive activity domains showed that volunteering (but neither paid work nor childcare) was associated with lower cumulative odds of frailty after adjusting for age, disability, and cognitive function. This relationship diminished and was no longer statistically significant after adjusting for personal mastery and religious service attendance

Wong et al. [23]	Journal of Aging and Health	Persons aged 60+ from the Mexican Health and Aging Study, a national survey of older-adults in Mexico in 2001	Cross-sectional study	Gender differences were profound. Return migrant women are more likely to be disabled while men are wealthier than comparable older adults in Mexico
Giacomin et al. [24]	Cadernos de Saúde Pública	1,786 elderly (>60 years) selected by random sample	Cross-sectional study	The prevalence of disability was 16% (8% lighter and severe). Age and worse self-rated health were independently and positively associated with both levels of disability. Hypertension and arthritis were associated with mild disability, while diabetes and stroke were associated with severe disability. Negative association with severe disability was for visiting friends in the last thirty days
Barry et al. [25]	Journals of Gerontology Series A: Biological Sciences and Medical Sciences	754 persons, aged 70 years or older	Cross-sectional study	Depressed participants were more likely than those who were non-depressed to transition from a state of no disability to mild (HR= 1.52; 95%CI: 1.25-1.85) and severe disability, and from a state of mild disability to severe disability; and were less likely to transition from a state of mild disability to no disability and from a state of severe disability to no disability
Duca et al. [26]	Revista de Saúde Pública	598 subjects aged over 60 years, selected in cluster sampling in 2 stages in the city of Pelotas, Brazil	Cross-sectional study	The prevalence of disability relating to basic activities was 26.8% (95%CI: 23.0-30.8) and the lowest proportion of independence was to controlling the urination and/or evacuation. Among the instrumental activities, the prevalence of disability was 28.8% (95%CI: 24.5-33.1), particularly in relation to moving around using a means of transport. A high proportion of elderly (21.7%) had more than one activity with disability in instrumental activities. In relation to basic activities, the greatest proportion presented dependence for only one activity (16.6%). In the adjusted analysis, disability relating to basic activities was associated with dark brown skin/black/ other ($p=0.01$) and with increasing age ($p<0.001$). Disability relating to instrumental activities was only associated with increasing age ($p<0.001$)

Banhato et al. [27]	Psicologia teoria e prática	394 community elderly people, with mean age of 71.01 years old	Cross-sectional study	MMSE digit span and verbal fluency beyond and a questionnaire about physical activity were used. The results showed that most of the elderly people was female (69.5%), with 43.9% practicing some physical activity and out of these, more than a half done by own will, specially walk. The most actives were younger, had higher scores in cognitive assessment and had more schooling. It was observed a statistically significant relationship between activity, scholarship and cognition
Fuller-Thompson et al. [28]	Journals of Gerontology Series A: Biological Sciences and Medical Sciences	Americans adults aged ≥65 and older	Cross-sectional study	The rates of basic ADL disabilities among community-dwelling adults aged 65 and older increased 9% between 2000 and 2005. When institutionalized elders were included, basic ADL disability rates were stable among men, but increased among women. Functional limitation rates did not significantly change between 2000 and 2005
Torres et al. [29]	Revista Espaço para a Saúde	117 dependent elderly individuals enrolled in the health units of family coverage area of Jequiezinho the neighborhood, in the city of Jequié (BA)	Cross-sectional study and descriptive.	Health problems were present in 93.16% of the elderly. The most frequent pathology was hypertension (23.10%). Regarding the functional capacity, the average was 53.89 (±24.46) points, minimum value of zero and a maximum of 95 points. Regarding the classification of the level of dependency, 53.85% of the elderly had mild dependence
Toscano et al. [30]	Revista Brasileira de Medicina do Esporte	238 female elderly subjects (69.2±6.69 years) drafted from 23 elderly groups of Aracaju (SE), Brazil	Cross-sectional study	Significant association was identified in this study between the level of physical activity and health-related quality of life
Reis et al. [31]	Psicologia em Estudo	60 elderly people in the age group 60-80 years and above 80 years	Descriptive study	40% of respondents had preserved cognitive functions and 60% demonstrated some not suggestive cognitive impairment deficit. Of the latter, 50% were included in the range 26-24 points, 33.4% in the 30-26 points and 16.6% distributed in the range of 23 points or less

Wrosc et al. [32]	Psychosomatic Medicine	164 older adults were assessed over 4 years by measuring participants' problems with performing activities of daily living	Cross-sectional study	A large increase in functional disabilities was observed among participants who secreted elevated baseline levels of cortisol and did not use health-related control strategies. By contrast, high cortisol level was not associated with increases in functional disabilities among participants who reported using these control strategies. Among participants with low cortisol level, there was a relatively smaller increase in functional disabilities over time, and the use of control strategies was not significantly associated with changes in functional disabilities
Alencar et al. [33]	Revista de Nutrição	19 subjects, aged 61-79 years, of which 2 were male and 17 female	Exploratory, Descriptive and Qualitative study	The elderly stated that what motivated them to participate in the program and attend the workshop was the opportunity to learn, socialize and look after their health. Their concepts on how nutrition education contributes to promote health were categorized in the following themes: functional capacity and self-care
Freedman et al. [34]	Social Science & Medicine	US individuals over 75 years of age	Cross-sectional study	The 75 and older population in the United States that the prevalence of difficulty with ADL declined from 30.2% in 1995 to 26.0% in 2004, whereas the trend in difficulty with IADL was flat. Onset of ADL limitations also was reduced during this period while recovery increased. Changes in the educational composition of the older population were linked to declines in the prevalence of ADL limitations, but there were also modest contributions of changes in mother's education, self-rated childhood health, and lifetime occupation. Declines in late-life vision impairments and increases in wealth also contributed substantially to the downward trend, and had chronic conditions not increased, it would have been even larger. Reductions in the onset of ADL limitations were partly driven by changes in educational attainment of respondents and their mothers and, in late-life, better vision and wealth. In contrast, the recovery trend was not accounted for by changes in early- or mid-life factors
Cupertino et al. [35]	Psicologia: Reflexão e Crítica	501 older adults between 60 to 93 years old	Qualitative study	Content analysis of their answers to what successful aging means identified 29 possible categories. The most cited definitions for successful aging were: physical health, social health and emotional health. On the other hand, the least cited answers were: a life of work; aging as a pathological process, and specific activities for older adults

Esperland et al. [36]	Journals of Gerontology Series A: Biological Sciences and Medical Sciences	424 volunteers aged 70-89 years	Cross-sectional study	Changes in all 4 outcomes were interrelated over time. The ability to walk 400m as a dichotomous outcome provided the smallest sample size projections (i.e., appeared to be the most efficient outcome). It loaded most heavily on the underlying latent variable in structural equation modeling with a weight of 80%.
Semba et al. [37]	Age Ageing	554 women (≥65 years) without severe walking disability (inability to walk or walking speed <0.4m/s) at baseline	Cohort study	155 women (27.9%) developed severe walking disability during follow-up. Rates of development of severe walking disability per 100 person-years among women in the lowest and in the 3 upper quartiles of total carotenoids were, respectively, 13.8 vs. 10.9 (p=0.0017). Adjusting for confounders, women in the lowest quartile of total carotenoids were more likely to develop severe walking disability (HR: 1.57; 95%CI: 1.24–2.00; p=0.0002) compared with women in the three upper quartiles
Yassuda et al. [38]	Psicologia: Reflexão e Crítica	69 healthy Brazilian elders were randomly divided into an experimental group and a control group	Cross-sectional study	There was superior improvement for prose recall and greater use of strategies (organizing lists and underlining texts) for the experimental group at post-test. Both groups reported fewer memory complaints and faster information processing (WAIS-R Digit Symbols sub-test)
Parahyba et al. [39]	Revista de Saúde Pública	Elderly women population in Brazil, totaling 16,186 subjects	Cross-sectional study	The prevalence of markers of mild, moderate and severe disability was greater among women, and increased with age. In logistic regression analysis, markers most strongly associated with increased prevalence of mobility disability were age, gender, low schooling, and low income. Rural residence was also associated with reduced prevalence.
Guimarães et al. [40]	Revista Neurociências	40 elderly that were in physioterapic treatment in the clinic school of UNILAVRAS	Cross-sectional study	The obtained results demonstrate that there was an significant statistic differentiation among the orthopedical and neurological patients, and the first ones presented a larger independence level (p=0,003) and none of them came totally dependent (p=0,007) in the accomplishment of the daily activities

Anderson et al. [41]	Textos Envelhecimento	93 elderly between 60 and 69 years (52.7%), 70-79 years (38.7%); and approximately 9.0% of respondents have 80 years or more	Cross-sectional study	The results obtained in the study revealed that most of the elderly respondents - 71% (66) - reached a level 5, which is completely independent for implementation of ADL; then 10.8% achieved level 4, partial dependence for performing complex activities, such as cutting toenails, go out for long distances and take bus. Levels 3 and 2 contemplated, both, 3.2%, totaling 6.4% and were partially dependent upon execution of activities such as climbing stairs, out to near home, take medication, use the bathroom in time, walk on a flat surface and bathing. Finally, 5.4% were limited to level 1, which represents dependence for performing simple activities, such as dressing up, lie down and get up from the bed and feed himself

IADL: Instrumental Activities of Daily Living; ADL: Activities of Daily Living; RR: relative risk; 95%CI: 95% confidence interval; CZr: copper to zinc ratio; Cu: copper; Zn: zinc; SPPB: short physical performance battery; STD: sexuality transmitted diseases; UnAti-UERJ: Universidade Aberta da Terceira Idade da Universidade Estadual do Rio de Janeiro; OR: odds ratio; BMI: body mass index; HR: hazard ratio; MMSE: Mini Mental State Exam; IPAQ: International Physical Activity Questionnaire - long form; SF-36: 36-Item Short Form Health Survey; WAIS-R: Wechsler Adult Intelligence Scale; UNILAVRAS: Centro Universitário de Lavras.

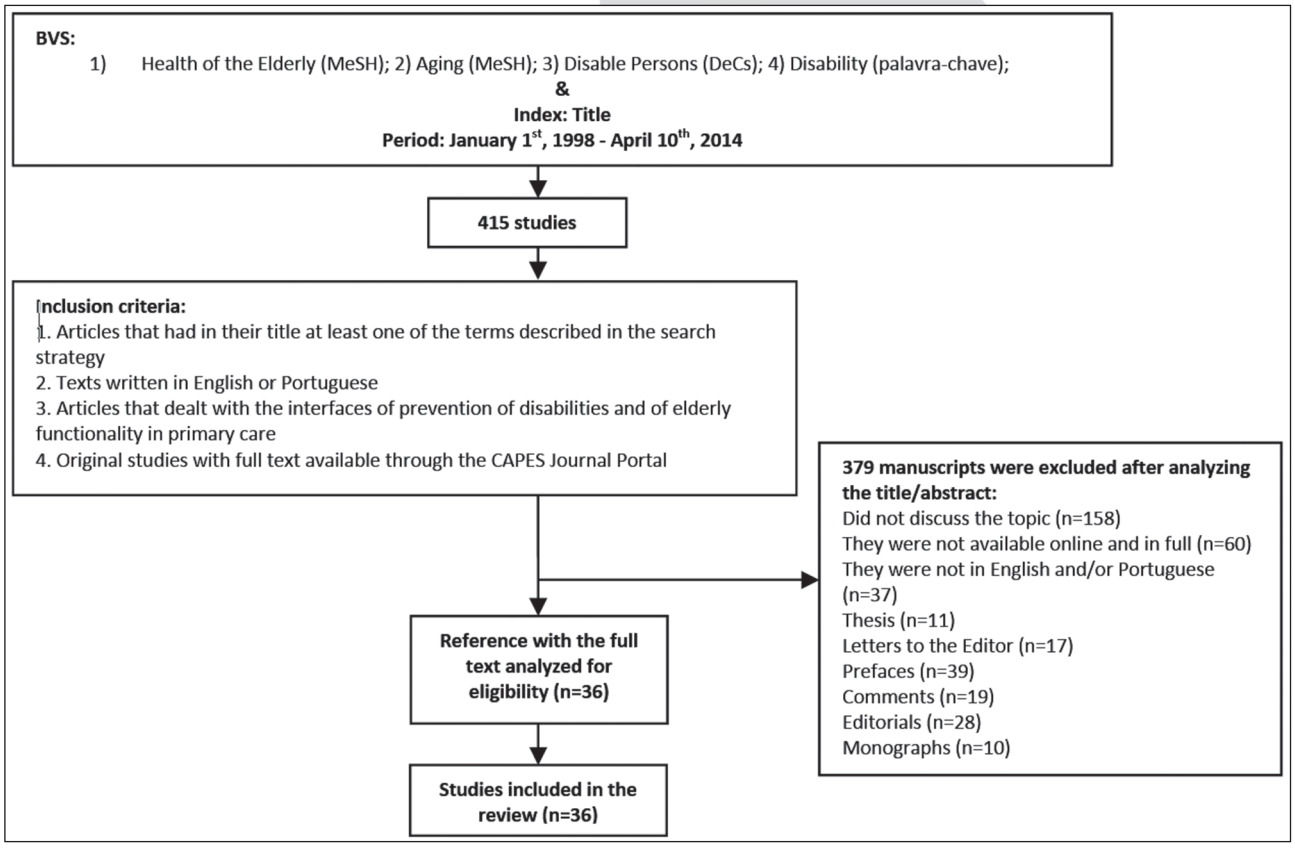

Figure 1. Flow diagram summarizing the procedure for the selection of studies for review. BVS: Biblioteca Virtual em Saúde; CAPES: Coordination for the Improvement of Higher Education Personnel.

Results

According to the strategy adopted, 415 manuscripts were initially found. After analyzing the titles and abstracts, we selected a total of 36 articles, according to the eligibility criteria and 379 were excluded. The results of these 36 studies were grouping in two areas: (1) Impact of the organic factors, and (2) Impact of the social factors in order to increase the data analysis and for heuristic reasons (Figure 1).

Discussion

Impact of the organic factors

Increasing age produces undeniable physiological changes that may unfold in limitations of physical, mental and social order. Although not fatal, such conditions can significantly compromise the quality of life of the public, giving disabling [1]. Another study showed findings suggesting that older adults who secreted relatively high levels of diurnal cortisol experienced an increase in their functional disabilities, but only if they endorsed low levels of health-related control strategies [32]. Study examined the relationship between serum copper to zinc ratio (CZr) and physical performance, muscle strength, functional status, and survival from the ilSIRENTE Study. It was a longitudinal study with individuals aged 80 years or older (n=346), and highlighted that all the baseline physical performance variables and the functional status measured by limitation with Basic Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) remained significantly associated with CZr while none remained significantly associated with the sole copper (Cu); only three out of five measures remained significantly associated with zinc (Zn) [11].

Age, race, body mass index <18.5, and the presence of morbid conditions, including congestive heart failure, peripheral artery disease, and diabetes mellitus were significantly related to the development of severe walking disability. Education ≤12 years, current smoking, multivitamin use, and the presence of coronary artery disease, stroke, osteoarthritis, and chronic obstructive pulmonary disease were not significantly related to the development of severe walking disability [37].

Evaluation of 2,429 persons who were 70 or older and presented with one or more limitation with basic ADL or IADL reported musculoskeletal, accounting for 864 (35.3 %) subjects, as being the primary cause of ADL and/or IADL limitations. The second most frequent impairment group was brain or behavioral, with 538 (22.0%). Impairments of the cardiopulmonary or hematological system accounted for 365 (14.8%) individuals, ranking third, while multiple impairments accounted for 327 (14.2%), ranking fourth [16]. For disability in complex tasks in 1,998 idosos, chronic diseases most strongly associated were chronic lung disease and congestive heart failure [7,10].

Research showed that health problems were present in 93.16% of the elderly, with 84.60% with up to two diseases. The most frequent diseases were arterial hypertension (23.10%), cerebrovascular accident (11.10%) and osteoarthritis of the knees (6.80%) [29]. It was emphasized that among non-disabled community-dwelling elders, the risk of disability increased with the number of areas reported with musculoskeletal pain [20]. Of the identified musculoskeletal diseases, 73.7% of elderly individuals reported having arthritis, osteoarthritis, joint pain, heel spurs, osteoporosis or rheumatoid arthritis, with 39.5% of the elderly in the age group 60 to 80 years. Having a herniated disk or back pain was reported by 18.4% of the sample - the most prevalent age group was above 80 years, and only 7.9% of seniors reported being carriers of bursitis or tendinitis [31]. It was highlighted that self-reported hypertension and arthritis were associated with mild disability, while diabetes and stroke were associated with severe disability [24].

For the elderly, the major consequence of falls was the risk of fractures, which can result in immobility and consequent loss of autonomy and independence in the study; 35.5% of the elderly reported fall in the last year, and of the elderly who fell, the most (29%) had only one fall, 4.3% two drop and 2.2% five drops [41]. Among chronic diseases, stroke was most strongly associated with mobility disability. In 1,998 respondents with stroke there were 2.6 times more likely to have mobility disability compared with those who did not [10].

Also a history of dementia or memory loss, and the California Verbal Learning Test (CVLT) score below 4 were associated with increased disability

incidence [7]. The rates of both, mild and severe disability, among older persons at risk for developing disability increased as the level of depressive symptoms increased. In the unadjusted analysis, only high depressive symptoms were associated with an increased likelihood of experiencing both mild and severe disability vs. no disability [25]. Participants who were depressed were more likely than those who were non-depressed to transition from no disability to mild and severe disability, and from mild disability to severe disability; and they were less likely to change from mild disability to no disability and from severe disability to no disability too [25]. Older people in physical therapy for neurological disorders had lower functional capacity and hence greater dependence of those with orthopedic pathologies [40].

Disability incidence was high and increased rapidly with age in the oldest-old, with rates essentially tripling between ages 90 to 94 and 95 or more [7].

We found direct tendency of functional disability with increasing age ($p<0.001$), reaching a prevalence of disability relating to basic activities 3.46 times higher in individuals aged over 80 years when compared to those aged 60 to 64 years [26]. It was argued that for individuals who reached 100 years of age, a significant decline in functional capability was expected in comparison to the capabilities of younger older adults; however, it was observed that over 25% of centenarians were independent [6].

It was evident that individuals who were 75 or older in the United States had the prevalence of difficulty with ADL declined from 30.2%, in 1995, to 26.0%, in 2004, whereas the trend in difficulty with IADL was flat [34]. The ADL evaluates the severest degree of limitation in the functional spectrum, whose AIDL are considered more complex than the tasks in the field of personal care and include activities such as shopping, food preparation, housework, laundry, commuting, taking medication, handling money and the use of telephone [39].

There was evidence of an interaction by gender in associations between self-efficacy and functional decline (test of interaction $p=0.03$), with no evidence of an association in women. Men with higher levels of general self-efficacy had lower odds of functional decline than men with lower levels of self-efficacy [14].

Mobility can be evaluated through self-declaration using a hierarchical approach beginning with simple tasks of mobility, such as moving from the bed to a chair and progressing to walking short and long distances, and climbing stairs. Results using mobility measures have proven valuable in the functional status of the study compared with demographic characteristics and chronic conditions [39].

Female and single individuals (the) / separated (the) / widowers (the) were at risk factor for the IADL [26]. In the sample of another study, 117 elderly dependents (70.09% elderly female), functional capacity had an average of 53.89 (±24.46) points, minimum zero value, maximum of 95 points and median of 60 points, with just over half of the elderly having mild dependence, followed by 23.08% classified as moderate dependent [29].

Impact of the social factors

The health and quality of life of elderly people, more than in other age groups, are influenced by multiple physical, psychological, social and cultural factors [41]. In this context, family and social loneliness marginalize the elderly, taking him to hopelessness and preoccupation. There is a tendency to the disincentive for personal and social actions, setting aging in a network of socio-economic, cultural and psychological conflicts [33].

Study that evaluated 93 elderly patients at a health care program for the elderly found that 10.9% were said to be not at all supported by relatives, while 16.3% said they are poorly supported and 14% rated their relationship with the their families as poorly or bad [41]. Formal support may play an important role in complementing an existing informal support, to helping maintain quality of life for older adults, facing increasing physical health decline [13]. It was said that having a low self-rated quality of life or rare contact with family and friends also predicted incident disability [7].

Another crude analysis on disability reported that basic activities were associated with the following outcomes: female, with brown/black/other skin color, and single/separate/widow as current marital status [26]. The majority of factors examined, including older age, lower educational levels, no partner, lower Mini-Mental State Exam (MMSE) scores, and greater numbers of chronic conditions at titled group T1 were associated with

both functional decline and institutionalization [14]. Community residents showed better cognitive functioning than facility residents on all measures. Community residents also showed better physical performance in terms of grip strength, Multidimensional functional assessment of older adults measuring (OARS), ADL and IADL, direct assessment of functional status-revised (DAFS), the short physical performance battery (SPPB) and physical performance and mobility examination (PPME) [39].

Study that was adjusted the statistical analysis by age found that the following factors were associated with mobility disability: skin color, sanitary conditions of the household, education, household size, urban/rural residence, family income, and asset ownership [1].

Those with less than high school education had significantly lower functioning on the Wechsler Adult Intelligence Scale-III (WAIS) similarities than the other three educational categories. Those with more than high school education also had significantly higher functioning on the WAIS similarities than those with some high school and those who completed high school [21].

Age and education were associated with disability. More years of education was associated with lower probability of disability [23]. Correlating mental state with divided education in the variables illiterate, literate, primary and higher education, we observed that the level of education on non-literate was more present in individuals with no cognitive impairment suggestive deficit (45%) [31].

Study showed that changes in the composition of the older population with respect to education, the education level of their mothers, their health during childhood, and lifetime occupation were linked to declines in the prevalence of ADL limitations, self-rated childhood health, and lifetime occupation [34].

Research points that the significant correlation time of participation of older people in community activities related to church with age ($r= -0.579$; $p=0.009$), cognitive performance ($r=0.467$; $p=0.044$), and that older participants community activities had lower prevalence of self-reported falls when compared to non-participants [17].

It was noteworthy that elderly respondents attributed considerable value to living with friends and participation in groups of "best age" as actions that promoted health/wellness [18]. It became clear that severe disability was independently and negatively associated with number of visits by friends in the previous 30 days [24].

It was argued that the lack of regular physical activity was a potential risk factor that could increase the functional decline and the costs of treatments [30]. Higher level of physical activity and lower energy intake may be protective against the development in basic ADL and IADL disability in older persons. Positive support from friends had a significant effect on physical activity ($p=0.0072$) [8]. Levels of physical activity augmented as support from friends increased. The control variables that have significant effects on physical activity were age ($p<0.0001$), race ($p<0.0001$), education ($p<0.01$), income ($p<0.01$), and number of chronic conditions ($p<0.05$) [19].

Regarding the type of performed activity, the walk was the most frequent (77.3%; n= 133), followed by fitness (12.7%; n=22) and water aerobics (10.4%; n=18); 77 people (44.5%) exercised two to four times a week, and 82 (47.4%) more than four times. In relation to time, 83 elderly patients (50.9%) reported that the activity practiced for up to five years and 15 (9.2%) was made for over 30 years [27].

In other research, some elderly demonstrated consciousness about the need to systematically attend the doctor and to follow their guidelines. They considered important to take the drugs properly, to maintain personal hygiene, to have proper nutrition and to practice physical activity [18]. In another study, physical health (53%), social health (46%), emotional health (37%), concern about food/exercise (36%) and avoid risk factors (19%) were the categories most frequently reported by the elderly as a definition of healthy aging and what was important to get that aging. The least emphasized aspects by the elderly in healthy aging definition were: specific activities for third age (0.4%), work over a lifetime (0.6%), seen as pathological aging (0.6%) and learn with parents (0.8%) [35].

However, the memory of interventions for healthy older adults, as well as cognitive rehabilitation for elderly people with cognitive impairment, in addition to what is expected for the age, understand little studied subjects, although of great im-

portance, since the cognitive function of the elderly is related to health and quality of life [38].

It was noteworthy that 80% of the elderly with severe disability had no access to home services in the metropolitan region of Belo Horizonte. On the other hand, the lack of association between disability and medical consultations, both verified the presence of association between them and chronic diseases, may be an indication that the performance of health services still remained guided primarily in the diagnosis and treatment of chronic diseases, and not for the maintenance and recovery of functional capacity of the elderly [4].

Given the advance of science oriented to sexuality of the elderly, this population has an expanded opportunity to dating and to have relationships. These new ways of experiencing the aging seem to reflect the increasing incidence of some diseases related to gender [15]. In this sense, health professionals and authorities should create more spaces for discussion and prevention programs related to the theme.

Conclusion

Therefore, Brazil has moved from a mortality scenario typical of a young population to one of chronic diseases, that is a complex and costly setting typical of the oldest countries, which requires constant care, continuous medication and periodic examinations. This results in the increased demand for health services by the elderly and requires recognition of the needs of those who attend this public.

Thus, it is necessary to improve the implementation of pro-active aging policies, for the elderly and not elderly, as a way to prevent disability. We must expand access to health services for the elderly population, including a varied complexity of rehabilitation actions, in order to reduce disability and the consequent needs (current and future) of using the health services, especially the complex and costly ones, as hospitalization and home visits.

The promotion of physical activity for seniors would be an alternative, because physical activity may contribute to preserve motor function and psychological well-being of the older adult; to assist in the prevention and treatment of some diseases; and to promote the maintenance of independence in activities of daily living. It is also known that emotional support, which encompasses love and affection - often from a spouse, family member, or close confidante - can make an individual feel loved, and thus motivate health-enhancing behaviors. High levels of social support were also related to a healthier diet, reduced risk of weight gain, and increased physical activity among women.

Author contributions

Evanira Rodrigues Maia, João Vitor Cândido Pimentel, Modesto Leite Rolim Neto, Jucier Gonçalves Júnior, were responsible for the design of the study. Lorita Marlena Freitag Pagliuca and Modesto Leite Rolim Neto, were responsible for conducting the systematization and revised the final version.

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Instructions for the authors

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Abstract

In this paper the instructions for preparing camera ready paper for the Journal are given. The recommended, but not limited text processor is Microsoft Word. Insert an abstract of 50-100 words, giving a brief account of the most relevant aspects of the paper. It is recommended to use up to 5 key words.

Key words: Camera ready paper, Journal.

Introduction

In order to effect high quality of Papers, the authors are requested to follow instructions given in this sample paper. Regular length of the papers is 5 to 12 pages. Articles must be proofread by an expert native speaker of English language. Can't be accepted articles with grammatical and spelling errors.

Instructions for the authors

Times New Roman 12 points font should be used for normal text. Manuscript have to be prepared in a two column separated by 5 mm. The margins for A4 (210×297 mm2) paper are given in Table 1.

Table 1. Page layout description

Paper size	A4
Top margin	20 mm
Bottom margin	20 mm
Left margin	20 mm
Right margin	18 mm
Column Spacing	5 mm

Regular paper may be divided in a number of sections. Section titles (including references and acknowledgement) should be typed using 12 pt fonts with **bold** option. For numbering use Times New Roman number. Sections can be split in subsection, which should be typed 12 pt *Italic* option. Figures should be one column wide. If it is impossible to place figure in one column, two column wide figures is allowed. Each figure must have a caption under the figure. Figures must be a resolution of 300 DPI, saved in TIFF format, width 10 cm min. For the figure captions 12 pt *Italic* font should be used. (1)

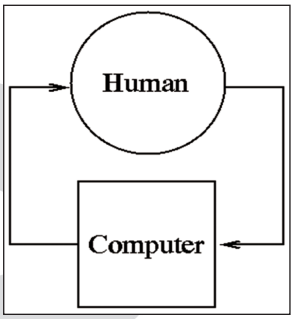

Figure 1. Text here

Conclusion

Be brief and give most important conclusion from your paper. Do not use equations and figures here.

Acknowledgements (If any)

These and the Reference headings are in bold but have no numbers.

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