

Determinants of Health Status among UNISALUD Patients with Osteoarthritis of the Knee: An Examination Using the Lens of Critical epidemiology

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Introduction

Traditionally, the study of the health/disease process in both individuals and social groups has adopted the positivist approach used in the natural sciences. The rigors of the scientific method are used to evaluate various health conditions by studying their determinants and their relationships using observable and measureable variables. This reductionist approach ignores the larger social reality, historical factors, culture, politics, and economics despite the fact that these are all important determinants of health status and quality of life for both individuals and collectivities.

The contemporary understanding of the health/disease process is product of a long historical development which began in the Stone Age with the idea that illness was a punishment sent by the Gods or evils spirits. In the Ancient world the Hippocratic school developed environmental and humoral

theories of disease. From the 15th to the 18th century, Europeans explained ill health as the result of miasmas. By the mid-19th century recognition of the importance of social causation led to the creation of social medicine in Germany and France. However, the 19th century closed with the discoveries of Pasteur in France and Koch in Germany and the dawn of germ theory as a causative model.

The 20th century begins, therefore, with a unicausal theory of disease; the ecological triad (infectious agent, host, and environment) explained infections and their causes. However, by the end of the 20th century as uni-causality proved inadequate to explain non-infectious diseases, multi-causal theories emerged. (Lalonde, 1974) These incorporate genetic, biologic, and psycho-social factors; life styles; and the analysis of health services to understand the behavior of chronic diseases.

Multi-causality has been criticized for being reductionist. By restricting its vision to factors which can be measured, multi-causality cannot capture the complexity of population health status. Further, it does not accept that health is a social construct which carries different meanings in different social groups, ethnicities, and cultures. Health is determined by the political and economic environment of specific historical moments. Each individual has his or her own appreciation of health which is molded by his/her individual history and context.

In 1970 a new view emerged of health and disease as moments in a process that continued throughout the life cycle. (Hernandez, 2007) This was also the year which saw the creation of a new

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paradigm in the form of Critical Epidemiology. Critical Epidemiology examined the health of individuals and groups by studying individual determinants such as genetic, biological, and psychological factors; the impact of individual lifestyles; social support networks; and structural determinants such as political organization and modes of social production and reproduction. This perspective goes beyond radical positivism and represents an advance to dialectical realism. (Breilh, 2007)

It should be emphasized that conceptualization of the health/disease process has undergone historical evolution and reflects contemporary political, social, economic, and health realities. In Latin America demographic and epidemiological shifts have resulted in new conditions and determinants of individual health. These "transitional patterns" have been the subject of analysis (Frenk, Bobadilla and Lozano, 1996) and projections have been offered concerning their impact on disease prevalence. (Murray and Lozano, 1996) As chronic, non-infectious diseases become more prevalent, measures such as years of life lost to disability or premature death become the best way to measure the burden of disease. Usually, the global burden of disease results from the gap created by disability and premature death when compared to a current international maximum life expectancy of 80 years. In Colombia, for example, this burden reaches nearly 150 years of healthy life lost (AVISAp), per thousand population. (Londoño, personal communication, 2008)

Within this context, programs to promote health and prevent disease must move beyond the limits of bacteriology, microbiology, and uni- or multi-causal theories. Understanding health determinants and the different domains in which the health/disease process evolves is now key to creating a holistic conception which promotes dialogue between professional and popular ideas. Such a dialogue integrates patients into the process of evaluating and diagnosing the conditions which affect both individual and collective health as well as quality of life.

This study was undertaken to identify and describe health determinants in patients with osteoarthritis, a chronic condition which impacts on patient autonomy and functional status. The study

used qualitative and quantitative measures. These measures were developed with the idea that UNISALUD* patients with osteoarthritis of the knee could draw upon their own life experiences to identify determinants of their ability to participate in society, carry out their activities of daily living, and achieve their life goals.

Methods

Study Type and Measures

This is an exploratory descriptive study examining the health determinants of UNISALUD users with osteoarthritis of the knee. Both qualitative and quantitative measures were used for data collection.

Study sample

All users of UNISALUD with an ICD-10 diagnosis of "gonarthrosis" (knee arthritis) were eligible for the study. Users were identified in the UNISALUD database and included paying patients and those who received care as a social benefit.

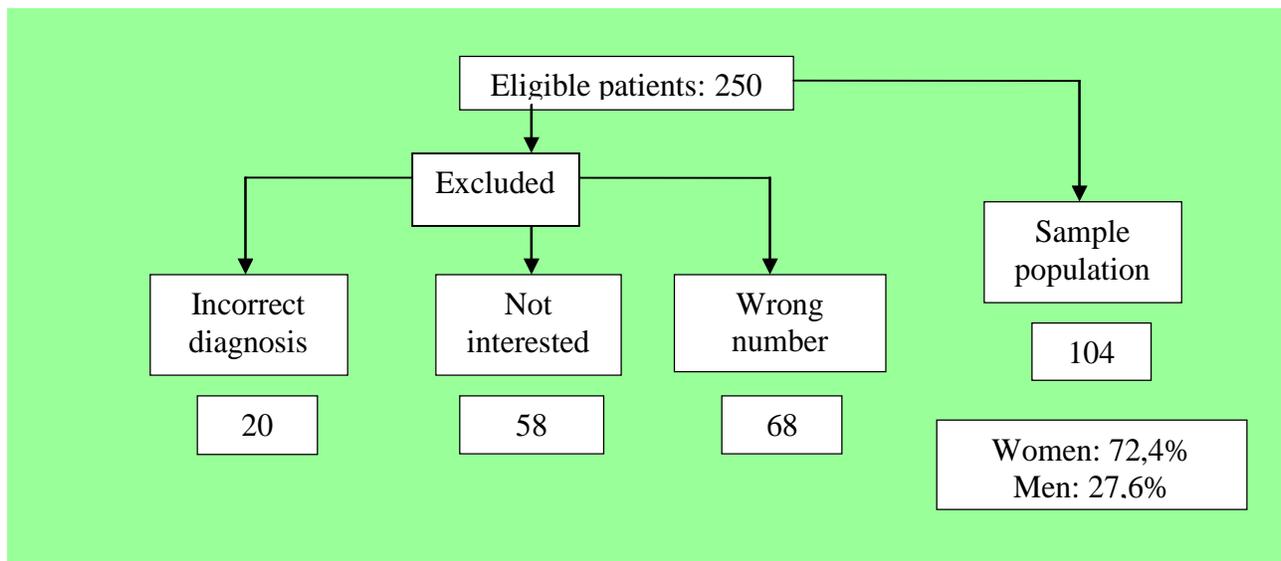
Sample Size

UNISALUD has 1200 users with a diagnosis of generalized arthrosis; 600 of these have been diagnosed with arthritis of the knee. Based on considerations of feasibility, a random selection of these 600 patients was made. A sample size of 250 subjects was calculated to provide a confidence interval of 95% for quantitative measures with an error of 5%.

Protocol

Initially questionnaires were completed during an individual interview. These questionnaires included closed-ended questions using standardized instruments, family geno and ecograms, and open-ended questions about users' psychological condition and experience with UNISALUD as a source of health care. (Hernandez, 2008). In a second phase medical charts were reviewed after obtaining patient consent. A focus group was conducted about support networks. Finally, we reviewed UNISALUD programs and services for chronic disease management.

* UNISALUD is the health service of the National University of Colombia. See: <http://www.unisalud.unal.edu.co/pages/publico/QuienesSomos.jsp>



Data analysis

Data from the first two phases of the study (questionnaires, clinical histories) was analyzed using SAS statistical software to provide descriptive data and to create profiles. Open-ended questions were analyzed by looking for deductive categories and then emergent themes; these were used to create a matrix and diagram of relationships. (Bonilla, 1997; Hernandez, 2008). Finally, the lens of critical epidemiology was employed to create diagrams and propose tools that would allow the respective analysis of the general, particular, and individual dimensions of osteoarthritis of the knee.

Results

The study population was composed of UNISALUD users with a diagnosis of osteoarthritis of the knee. After enrollment and consent the final sample size was 104 users. (See figure)

General Characteristics of the Population

The socio-demographic characteristics of the population are presented in Table 1.

Sixty-three percent of users are elderly; this agrees with longitudinal studies showing the incidence of osteoarthritis increases with age. (Untura and Cabbage, 2007). Nevertheless thirty-four percent of users are either in the young adult or middle age groups. This also agrees with studies on the prevalence of chronic diseases in non-geriatric populations. These cases are most often associated with occupational risks or repetitive stress due to the unhealthy lifestyles and working patterns seen in a University community.

A plurality of users (26.9%) had achieved only a

baccalaureate degree; 35.7% of these were employed as technicians or service aides and 28.6% in administration. However, the majority of technicians and service aides had only completed primary school. Many of these jobs involve sitting or standing; repetitive movements—such as going up and down stairs or carrying heavy objects—which can cause joint damage. Those with advanced degrees dedicated themselves either to teaching (95.8%) or art (4.2%). Teaching also involves repetitive stress on the lower extremities because of prolonged sitting and standing, including activities like going up and down stairs. These activities can lead to the development of stress-related degenerative diseases in the legs.

We found that 76.9% of the population come from social classes 3 and 4. The University provides guarantees for its workers which help to maintain their income and life style. We did not observe significant numbers of employees from classes 2 and 5, which demonstrates the conditions of equality among users of UNISALUD.

The Three Domains of Critical Epidemiology

The goal of this study was to examine a chronic non-infectious disease through the lens of critical epidemiology; this offers an alternative perspective on the health/disease process. The social and the biological are interwoven so as to illuminate the conditions and relations which affect the health of individuals and groups. This process is analyzed in three domains: general, particular, and individual. The domains obey an hierarchy and allow the understanding of health from its genesis to its reproduction.

Table 1: Demographic Variables		
	#	Percent
Life Stage		
Adult	35	33.7
Geriatric	69	66.3
Gender		
Female	79	75.9
Male	25	31.6
Race		
White	60	57.7
Asian	32	30.8
Black	12	11.5
Education		
Primary	24	23.1
High School	28	26.9
Technical	14	13.5
College	14	13.5
Post-graduate	24	23.1
Social Class		
2	15	14.4
3	43	41.3
4	37	35.6
5	9	8.7

Structural determinants: The General Domain

This domain includes the logic and principles of social reproduction; the structures of power; and the economic, political, and cultural paradigms which rule society. These factors permit an understanding of the general determinants of the health/disease process in the users of UNISALUD who have osteoarthritis of the knee. One of those structural determinants is UNISALUD's position as a public health entity within the General System of Social Security for Health. UNISALUD is subject to special rules which recognize its particularities within the broader system and favor the principles of universality, comprehensiveness, and fairness in the provision of health care services to its users.

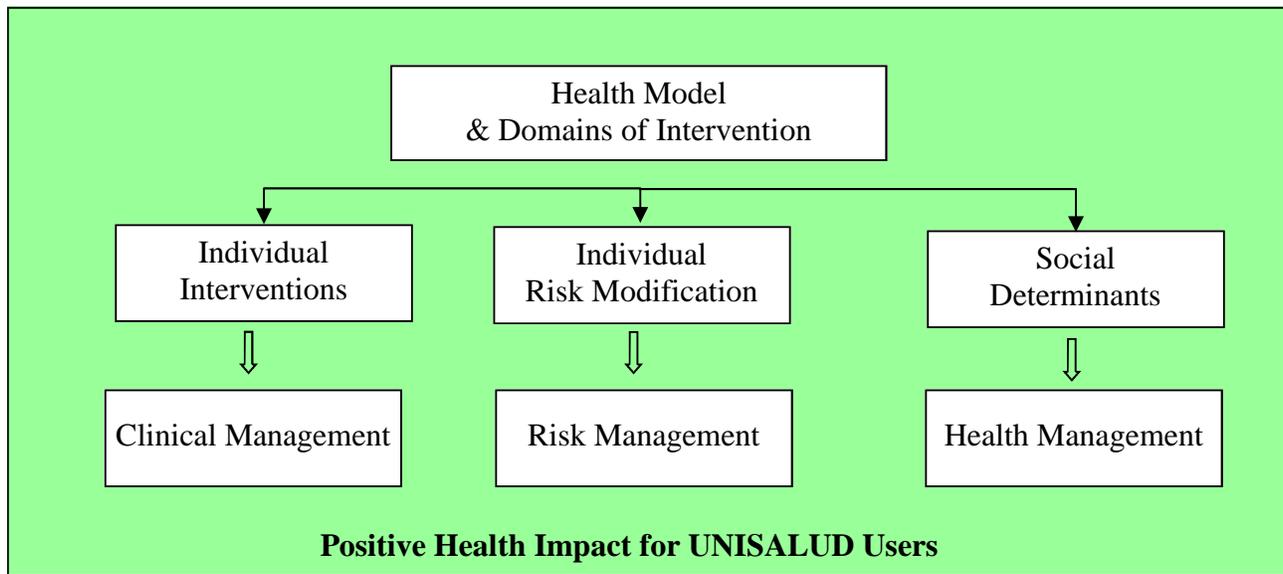
UNISALUD was established as the health service for the National University of Colombia and was charged with implementing the right to health and wellbeing. Throughout its history UNISALUD has managed to maintain its own administrative structure, separate from the Social Welfare Fund (Caja de Previsión Social). This was formalized in government commitments expressed in Decree 404 of 1996. UNISALUD has also managed to maintain

part of the services offered to its affiliates and beneficiaries through labor contracts signed between the National University of Colombia and the Workers Union (Sindicato de Trabajadores). This process illustrates how a public university was able to profit from the spread of democracy and the political participation of various partners in order to effectively implement the right to health. This remains true despite the fact that the organization of UNISALUD has been heavily influenced by the search for cost effectiveness and efficiency, reflecting domination by market models which privilege productivity and sustainability rather than the health and quality of life of users.

Evidence for this change is provided by survey data. 29.9% of users complained about pharmacy services, specifically delays in availability and dispensing of medicines; concerns were also voiced about the approved formulary which contains mainly generic drugs. With respect to medical services 9.6% of users were unhappy with the quality and bedside manner of the health professionals; 11.5% were not satisfied with the availability of appointments, and 5.7% were not satisfied with the increase in co-payments. These percentages reflect the slow changes occurring in UNISALUD with regard to the provision of health services; these changes seek to cut costs by making the system more efficient.

These changes also affect the model of health used by UNISALUD. In 2006 the national system adopted a model which sought to promote the health and welfare of users by achieving WHO-defined objectives using existing resources (i.e through efficiencies). As a micro-system, UNISALUD proposed to the national authorities a model which would set the rules for the various actors in the system, program investments and training, maximize the distribution of resources, and structure the actual delivery of services. (Grosso, revised 2009)

This model places a high priority on public health approaches, such as health promotion, prevention, and access to social welfare programs. We see this as a movement away from health care provision (within the Social Welfare fund) to a focus on risks and prevention. This takes place in parallel with health promotion which continues to be thought of as health education. Nevertheless, the necessity to present the needs of users in a way that is politically acceptable in terms of "Health Man-



agement" continues to obstruct and limit clinical care. With the focus on efficiency and efficacy, more attention is now being paid to "risk management" and "clinical management" than to the actual functions of a health care system.

Health promotion and disease prevention programs primarily support "Risk Management." Our subjects commented that: "UNISALUD offers education, but it does a poor job of getting the word out and informing people" so that few users actually participated in UNISALUD programs. "We figure we know it already, or that they don't listen to us so that we don't listen to the radio. Often, it's our fault, but not always. That's why we've asked UNISALUD to set up an information center which would be more interactive." (Focus Group, 2009). UNISALUD offers educational programs appropriate for all stages of the life cycle. The "Older Adult" program emphasizes interactive activities such as self-help groups and the "Day Club" which functions like an extended support network to enrollees. (UNISAUD, 2009)

Not everyone participates in these programs. Some are unaware of their existence, and others don't attend for a variety of reasons. These programs remain within the confines of risk reduction and promote health only through education in disease prevention and life-style modification. They promote adherence to UNISALUD programs and thus lead to increased dependency on the part of users. This limits the ability of users to engage in self-care behaviors, further diminishing their autonomy and empowerment.

Prevention clearly means primary prevention

based on health promotion, healthy lifestyles, and risk factor control. No attempt is made to address the user's particular determinants such as their family situation or social support networks. The primary focus is on the knowledge, behaviors, and practices of the individual user who is offered information on the management of diseases. The majority of users do not take advantage of these services because they lack time or don't know they exist. The users comment: "the family is not taken into consideration." (Focus Group, 2009)

Consequently, we observed that UNISALUD continues to have difficulty developing the abilities and capacities of users to maintain their autonomy and self-control with respect to their health. While this should be one of the axes of health promotion, the paternalistic context is one that limits itself to giving information to patients. We wondered if it was possible to promote patient autonomy in the context of paternalism? Perhaps autonomy is not seen as something necessary? Were we witnessing a form of domination in these programs?

Indeed, the ideology of paternalism, domination, and assistential care clearly marks the relationship between UNISALUD and its users. This ideology, along with UNISALUD's own history, defines the institution's actions, policies, and ideologies faced by the very real and observable health problems of its users, themselves individuals with their own characteristics and history. When asked about their participation, our subjects stated: "We don't participate actively. We don't have a space to participate, to comment on how things are going. We only get to fill out a survey. When things change we aren't

informed and we aren't offered any explanation." This reinforces the sense of inertia felt by users, a finding confirmed in a study of user perceptions of the quality of health care. (Ardila, 2006) Users imitate what they see: they behave themselves and don't rock the boat. Even though they may feel disenfranchised, they still feel UNISALUD is "one of the best health services in the country."

Intermediate Determinants:

Domain of the Particular

The domain of the particular includes working and consumption patterns, group dynamics, and the lifestyles of UNISALUD users. This domain is informed by social roles and positions as well as interactions in different social spheres.

73.1% of the users were not currently working; the majority are either retired or are housewives. 10.6% work in technical positions, teach, or are general service aides; 9.6% of these are teachers. Those working currently in technical, teaching, or service jobs are young and have premature symptoms of osteoarthritis. 82.7% of those currently working do not have sedentary jobs; their jobs require constant motion which keeps them active. 81.7% of users described support networks which included their families, exercise groups and other social groupings; these networks allowed them to interact with others thus avoiding a sedentary lifestyle and easing acceptance of their health situation.

The Family as the Fundamental Social Unit

As a determinant of health, the family interacts with the disease as well as influences the perception of pain and dysfunction. Within the family patterns of illness expression and reproduction develop in accordance with family context and lifestyle. We found the Family Apgar useful to measure support received by the user from their family. 55.8% of users reported good family functioning; they interacted with and received support from other members of the family on an on-going basis. 26% were judged to have mild dysfunction and 18.2% had moderate to severe dysfunction. There did not seem to be a relationship among our subjects between pain and family support. However there was a relationship between family support and functional problems. (See Table 2)

Table 2 demonstrates that the majority of the people reporting good family functioning have little difficulty realizing the activities of daily living

(ADL); users reporting slight family dysfunction report having a good deal of difficulty with their ADL's. These findings remain true despite high levels of pain reported by the users. 74% report moderate pain (4-7 on a 10 point scale) or severe pain (>7). Thus, we see high levels of tolerance for pain due to close ties and dependence on support networks which the majority consider fundamental for their health and wellbeing.

Support Networks

Studies in patients with chronic diseases have documented the fundamental importance of social networks for the management of pain and functional limitations. We considered the family and its members as a factor affecting the health and wellbeing of elderly individuals with non-infectious chronic diseases. 51.9% of users with osteoarthritis reported 7 or more support networks; 39.4% reported 4-6 networks. Among the networks reported by users were exercise groups, friends, the family (the principal support network), the church, and UNISALUD. UNISALUD was considered an important support network because it permitted access to health services.

Among the principal support networks 77.88% of the population reported that the family was their main source of support; 79.8% mentioned the Church and 52% cited UNISALUD as a health care service provider. Social networks made up of friends and groups were each mentioned by 43.26% of the study population. These numbers demonstrate that users are satisfied with the services provided by UNISALUD and with its acceptance of their health status; these factors contribute to their wellbeing.

21% of the remaining users report only loose affiliations with support networks such as friends and social groups. 16% reported that their relationship with UNISALUD was a poor one due to specific problems that had arisen in their experiences with UNISALUD.

UNISALUD users are somewhat different—in terms of demographics, disease patterns, and burden of disease—from Latin American averages; they are more similar to high-income countries or those Latin American countries with low mortality rates. Examining the key risk factors identified in the literature and found in UNISALUD users, we estimate that somewhere between 22% and 58% of the disease burden (as measured in DALY's) can be attrib-

Family APGAR \ WOMAC Score	Severe Dysfunction (n=32, 31%)	Moderate Dysfunction (n=15, 14%)	Mild Dysfunction (n=44, 42%)	No dysfunction (n=13, 13%)
Good (n=58; 56%)	16 ⁽¹⁾ 27,59 ⁽²⁾ 26,19 ⁽³⁾	5 8,62 33,33	28 48,28 63,64	9 15,52 69,23
Mild Dysfunction (n=27, 26%)	9 33,33 28,13	5 18,52 33,33	11 40,74 25	2 7,41 15,38
Moderate Dysfunction (n=12, 12%)	6 50 18,75	2 16,67 13,33	2 16,67 4,56	2 16,67 15,38
Severe Dysfunction (n=7, 7%)	1 14,29 3,13	3 42,86 20	3 42,86 6,82	0 0 0

(1): Number of subjects; ; (2): Percentage in row; (3): Percentage in column; there were 104 subjects

uted to hypertension, substance abuse, tobacco addiction, obesity, elevated cholesterol, limited consumption of fruits and vegetables, and physical inactivity. (UNISALUD, 2008).

We found that UNISALUD users had adopted healthy lifestyles such as regular exercise; this is facilitated by their support networks and access to opportunities for exercise, both of which favor self-care practices. We found that 40.4% of the population was at low cardiovascular risk. Abstinence from tobacco was not common in UNISALUD users with osteoarthritis of the knee who are over 60; 36.5% of this group was judged at low cardiovascular risk and 23.1% at moderate risk. Those patients with osteoarthritis judged at moderate risk were typically working, had sedentary jobs, and had unhealthy lifestyles. Given the prevalence of risk factors in this group, it is vital that UNISALUD review its adult health promotion and disease prevention programs to prevent the development of chronic, non-infectious diseases.

Discussion

Our data demonstrate that for a non-infectious chronic disease like osteoarthritis support networks (family and friends) as well the health care system (here, UNISALUD, a special governmental health provider) have a positive functional impact on those who suffer from the disease. The acceptance of their health condition contributes to the adoption of

healthy lifestyles. Nevertheless, UNISALUD's strategies for health promotion and health education do not focus on the family unit and thus neglect intermediate and proximal health determinants. These programs do not promote the autonomy and empowerment of the users given the paternalism that marks the relationship between UNISALUD and its users. This undoubtedly contributes to the fact that patients report high levels of pain despite their involvement in social networks. It should be emphasized that user participation in decision making, such as changes and reorganization within UNISALUD, is minimal. Users prefer to imitate what they see, acting like "good patients" and they avoid making complaints or demands; this is due to their satisfaction with the health care provided by UNISALUD which they describe as one of the best health care providers in the country.

In conclusion we found a population that relies on multiple support networks. This favors their ability to maintain function while accepting that they have a chronic health problem. It also facilitates the adoption of healthy lifestyles. Yet, it is also a dependant population that does not participate actively in the health service and waits passively for the health system to solve its health problems. The family is a determinant both of functional status and the ability of users to realize their life aspirations. The population we studied uses their socio-economic and educational status, in addition to social interac-

tions, to protect themselves from the ill effects of any family dysfunction.

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