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## Evaluation methods in health promotion programmes: the description of a triangulation in Brazil

Métodos em avaliação de programas de promoção da saúde: descrição de uma triangulação no Brasil

Elza Maria de Souza <sup>1</sup>

**Abstract** *Evaluation is a key word in any health promotion programme. However, it is a challenge to choose the most appropriate method of evaluation. The purpose of this paper was to describe a triangulated methodology developed to evaluate a health promotion intervention based on intergenerational activities and to describe the theoretical framework, which guided the study. From February to December 2002 a triangulation involving a community controlled trial, focus groups technique and observation process was developed in Ceilândia, Federal District of Brazil. Samples of 253 students aged 12 to 18 years old from a secondary school and 266 elders aged 60 and over from the local area were randomly allocated to control and experimental groups. Over four months, 111 students and 32 elders had weekly meetings at school to share their life histories. Before and after the intervention, a questionnaire was administered to control and experimental groups including the outcome variables. Although the study had some limitations, it was valuable in showing for the first time that this method can be used in interventions of this kind and also to show the importance of developing a theoretical framework to understand possible mechanism of interactions in intergenerational interventions. Key words* **Evaluation, Health promotion, Social capital, Triangulation, Intergenerational interaction, Theoretical framework**

**Resumo** *Avaliação é palavra-chave em promoção de saúde. O objetivo desse estudo foi descrever uma triangulação para avaliar um programa de promoção de saúde baseada em atividades intergeracionais e descrever o modelo teórico utilizado para a investigação. Foi desenvolvida no período de fevereiro a dezembro de 2002 uma pesquisa incluindo um estudo controlado na comunidade, grupos focais e observação de processo. Foram selecionadas duas amostras randomizadas de 253 estudantes, com idade entre 12 e 18 anos de uma escola de ensino fundamental e 266 idosos com idade igual ou superior a 60 anos, residentes nas redondezas da escola. As duas amostras foram divididas e alocadas aleatoriamente para grupos experimentais e controles. Durante quatro meses, 111 estudantes e 32 idosos encontraram-se semanalmente na escola para compartilhar suas histórias de vida. Antes e depois da intervenção, os grupos controle e experimental responderam a um questionário contendo as variáveis de interesse. Embora com limitações, o estudo serviu para mostrar, pela primeira vez, o desenvolvimento de um modelo teórico para explicar os possíveis mecanismos de interação em intervenções intergeracionais e que essa metodologia pode ser usada em intervenções desse tipo. Palavras chave* **Avaliação, Promoção da saúde, Capital social, Triangulação, Integração entre gerações, Modelo teórico**

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## Introduction

Evaluation is a key word in any health promotion programme without which it is difficult to know if the proposed objectives were met, if the resources were rationally used and, if changes are needed to improve effectiveness.

There are a number of alternative concepts of evaluation. However, in essence they are similar. The World Health Organisation<sup>1</sup> defines evaluation as judgement based on careful assessment and critical appraisal of a given situation, which should lead to drawing sensible conclusions and making useful proposals for the future. For the purpose of this paper the broad definition of evaluation given by WHO was adopted.

Health promotion has been defined as a process of enabling people to increase control over their health<sup>2</sup>. It has become an important and vital force in the new public health movement in which health is conceived also as a social phenomenon concerned with the wellbeing of the individual and the community<sup>3</sup>. However, evaluation of health promotion programmes is a challenge as health promotion takes place within a natural and complex setting, it is not possible, although desirable, to control all the variables that might affect health<sup>4</sup>.

## Methods of evaluation in health promotion

Promising strategies have been developed recently to evaluate community-based interventions. However, consensus has not yet been reached on what is the best method of evaluation. While Tones<sup>5</sup>, states that a controlled trial is not at all appropriate for a health promotion intervention, other authors state that it is not only appropriate but also recommended, provided that it fulfils the recommendations for a health promotion intervention<sup>6,7</sup>.

Because of the unique nature of health promotion interventions, a combination of quantitative and qualitative methods seems an appropriate approach<sup>8</sup>. Both methods have advantages and disadvantages. Quantitative data give us an idea of the dimension of the effects and enable us to identify *whether* there is a relationship between the intervention and the outcomes. The quantitative methods may also allow us to generalise findings. Nevertheless, they may oversimplify complex facets of a problem and fail to convey fully the richness and texture of human experience.

On the other hand, qualitative data may be better placed for determining *why* a relationship exists and for understanding the depth and significance of change for individuals and communities. As qualitative and quantitative methods are complementary it seems that the best approach is to include sufficient data of both kinds<sup>8,9</sup>. The use of multi-methodology to test the same hypothesis is called triangulation<sup>9,10</sup>. It is employed in general to enhance the reliability and validity of data.

## Quantitative methodology

Within the quantitative field, a hierarchy of evidence has been established which provide methodological rigour to assess results and then provide the insight needed for interpreting them. Randomised controlled trials are on the top of hierarchy of experimental studies. As randomisation means that any confounding factors are equally distributed among intervention and control groups, any latter difference observed between the groups can be attributed with more certainty to the intervention<sup>11</sup>. In a clinical controlled trial where the intervention is administered singly to individual people, it is also possible to use blinding procedures. Community intervention trials involve interventions on a community-wide basis with the intervention administered to a group. This makes blinding a difficult task<sup>11</sup>. This does not however, diminish the merit of community trials.

Although randomised controlled trial studies are on the 'top' of the hierarchy, this does not guarantee that this is always the most appropriate method to use in evaluation of community health promotion interventions. In choosing an experimental design for an evaluation of health promotion it is important to answer the following questions: Is it an intervention? Is it possible to have a control group? Can the intervention be randomised? If all the answers are positive then a community trial can be appropriate<sup>6</sup>. Keeping in mind all the pros and cons of this method it should be very useful in a stand-alone evaluation study or as part of a combined methodology.

## Qualitative methodology

For many qualitative researchers, more important than the establishment of a hierarchy, is the choice of the appropriate methodology<sup>8</sup>. Among qualitative methods, focus group techniques have

become very popular in the health arena. For the present study this technique was chosen because focus groups are particularly useful as they may be used to explore organisational barriers to successful implementations and gather general views. In health promotion studies they can be used in all the stages of a programme. One of the chief advantages of the focus group method is the use of group interaction to generate data<sup>10</sup>. It may also encourage participants to disclose behaviour and attitudes that they might not consciously reveal in an individual interview situation.

Although focus groups have becoming a popular technique in the health arena it has, as any methodology some limitations. If the research is an in-house evaluation, which means that the individual or the organisation implementing the programme is also responsible for the evaluation, bias can come into the wording of questions and selective attention to transcript quotes. Bias also can come from the focus groups members who either want to agree with the moderator (acquiescence bias) or want to be regarded in positive light (desirability bias)<sup>10</sup>. However, these are not reasons to avoid this technique. Its value depends largely on the researcher's skill in using the method appropriately.

### Process observation

Process observation is a formative model of evaluation in which the evaluator's task is to provide description of the steps of intervention and in particular of the value of perspectives of participants. It is an important tool to understand the dynamic of the initiative. It has been recognised as a crucial complementary method to monitor the programme and assess its progress and to make ongoing modifications and improvements<sup>5</sup>.

### Intergenerational interaction in health promotion

Intergenerational programmes have become an important activity to promote the wellbeing of elders and adolescents<sup>12-14</sup>. The proposition of intergenerational interactions in the field of health promotion is new, and as health promotion is an emerging area, both fields seek to identify evidence based interventions. This necessitates the development of high standard evaluation methodologies that are sound and well accepted by the scientific establishment<sup>4,12,15</sup>.

The purpose of this paper is to describe a triangulated methodology, including a community controlled trial, focus group technique and process observation to evaluate a health promotion intervention based on intergenerational activities developed in Ceilândia, Distrito Federal of Brazil and also to describe the theoretical framework used to build the hypotheses, which guided the study.

### Conceptual framework and hypotheses

There is an increasing interest in the development of psychosocial interventions in health promotion as an attempt to modify psychosocial processes in order to lead to better health<sup>4</sup>. Desired changes can occur at the level of the individual, the family, the social network, the workplace, the community or the population. The increasing focus on community health is due at least in part to growing recognition that behaviour is greatly influenced by the environment in which people live<sup>16</sup>. In the last 20 years, a number of health promotion initiatives have attempted to use the community approach to change behaviour, based on the principle of participation. Because change is the main goal of most community intervention studies, it is important to understand how and why such changes occur. A set of process theories that addresses community change has been developed. The general principle of social change includes theories at individual, organizational, community and environmental level. For the purpose of this study only three individual level theories were considered as they were the basis of the framework developed in this investigation.

The individual-level theories can be assigned to two basic classes: those based on intrapersonal characteristics of the individual and those that emphasise interpersonal factors as a basis for decision making<sup>16</sup>.

One of the best known intrapersonal-level theories in this area is the Theory of Reasoned Action (TRA), developed by Ajzen and Fishbein<sup>17</sup>. This view assumes that the predictor of behavioural change is the *intention* to change certain behaviour. That intention is shaped by *attitudes* towards that behaviour.

Interpersonal-level theories emphasises the importance of relationships individuals have with friends, families, and others in their environment as a determinant of behaviour change. Social learning theory (SLT) developed by Bandura<sup>18</sup> is probably the best known interpersonal theory in

the health field. According to the author the individual is regarded as a self-determining organism who acts on and reacts to environmental stimuli and acquires new ideas and behaviours by modelling them on focal others. In practice this type of change is promoted by exposure. This is accomplished by social contact. Another social theory developed by the Brazilian educator Paulo Freire<sup>19</sup>, is based on critical dialogue (dialogical method) which leads to a joint understanding of reality and consequently promotes individual and social changes.

Based on a combination of intrapersonal-level theory of reasoned action, interpersonal-level theory of social learning, social change theory through dialogue method, and also on previous findings related to intergenerational interaction<sup>12</sup>, a blended theory which for the purpose of this study was named Social Learning, Dialogical and Reflective Theory (SDRT) was developed as a framework to support the principles of the present research<sup>13</sup>. This pivots around the hypotheses that guided intergenerational activities using reminiscence processes as a means of interaction would promote social contact (exposure) between elderly and young people which could influence both age groups by favouring environmental change and providing consistency of information through dialogue, which may lead to reflection by comparing shared experiences (reasoning, critical views and better understanding of reality) and, by doing so, modelling themselves and creating new ideas which change previous beliefs. This change of beliefs will shape new attitudes which can result in a better understanding between generations, improvement in their feelings of cognitive components of social capital such as trust and reciprocity, improvement in family relationships, and improvement on participants' perception of health status. For the adolescents it also can influence gender roles. A schematic representation of this model can be seen in Figure 1.

## Method

From February to December 2002 a triangulation involving a community trial, focus group techniques and process observation of the intervention, were used to evaluate a psychosocial community intervention based on intergenerational interaction. A schematic representation of the design of the research can be seen in Figure 2.

## Identifying the setting for the study

Ceilândia is one of the satellite cities of Brasília, Distrito Federal of Brazil. The city had in 2002 an estimated population of 379,386 of whom, 4% aged 60 and over while adolescents, age ranging from 10 to 19 years old constituted 21% of the population. Although the proportion of elders is still low the projections for the future forecast a continuing ageing population<sup>20</sup>. Therefore, it seems sensible to start interventions involving this age group now so as to prevent improvisation in the future.

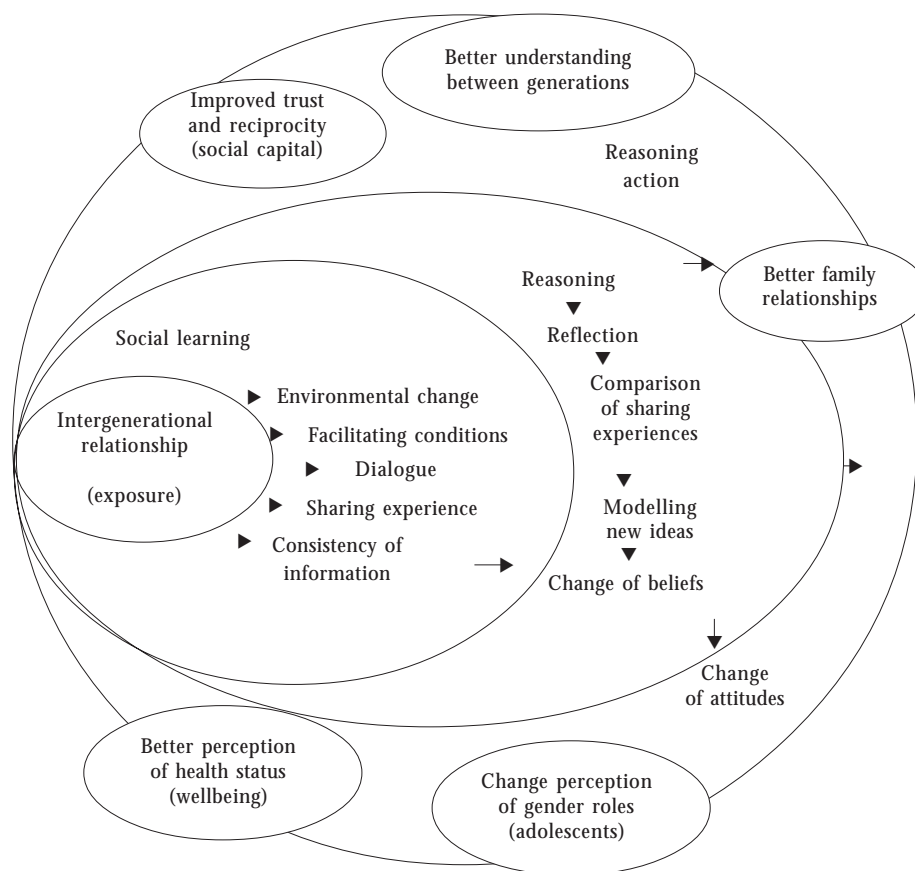
The City was chosen because it is a low income area with a large proportion of migrants, who constitute 54% of the population<sup>21</sup>. All people over 46 years old were born in other states. These people are ageing far from their roots. In short Ceilândia, like a number of similar areas, has a range of characteristics which may predispose to poor levels of social cohesion which suggests a need to develop interventions to promote social integration for better health.

## Target population and study samples

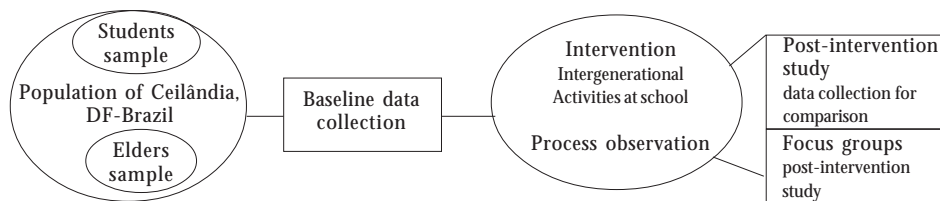
The target population was formed by two age groups: one sample was composed of elders, considered as those aged sixty years old and over, living in the catchment area of a selected secondary school of the city of Ceilândia. Students of the 7<sup>th</sup> and 8<sup>th</sup> grade of the chosen school, ranging in age from 12 to 18 years old comprised the other sample. Although 13 and 14 year old students predominate in these grades, there is a great diversity of ages due to educational ability. Both samples were randomly divided into two groups at baseline. In each sample one group received the intervention, the experimental group, while the other was the control.

## Sample design for the controlled trial

A multistage sampling method following three phases (primary, secondary and tertiary units) was used, as shown in Figure 3, which took the census clusters from which the households were screened in order to identify those including elderly people.



**Figure 1.** Schematic representation of blended theory (SDRT) to explain the hypothesised influence of the intergenerational interaction intervention on the outcome variables of the study.

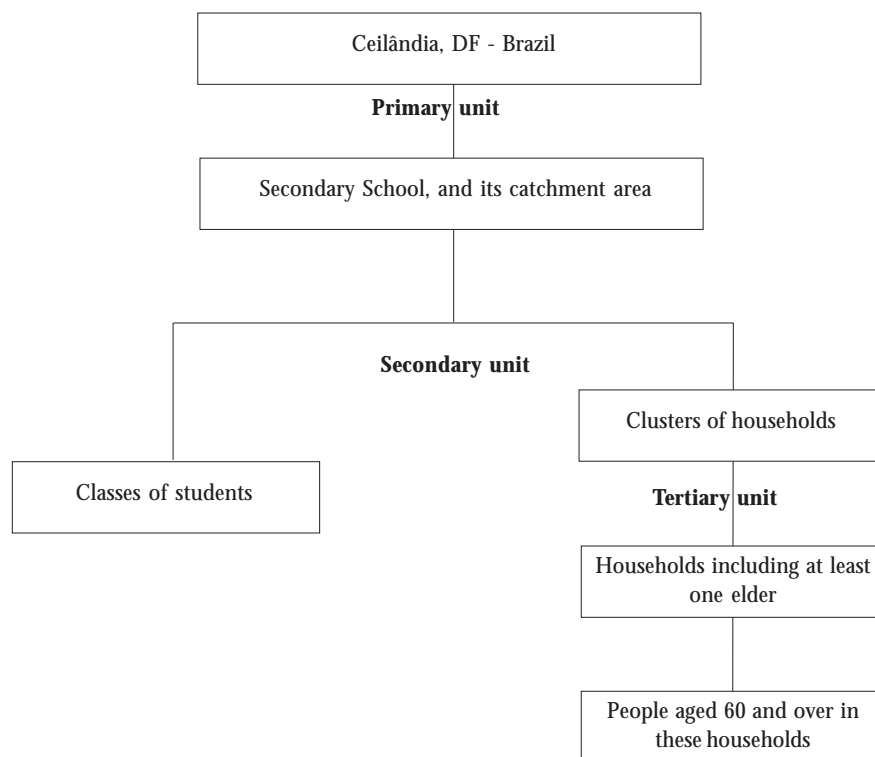


**Figure 2.** Schematic model of the study.

#### Primary unit selection – The secondary school and its catchment area

For the selection of the primary unit, one of the secondary schools of Ceilândia-DF, Centro

Educacional 7, was chosen purposively based on the number of students in the 7<sup>th</sup> and 8<sup>th</sup> grades of both sexes and the desire of its head teacher to co-operate with the development of the study. These measures were taken so as to make sure



**Figure 3.** Sampling design

that the number of classes of students was big enough to achieve the sample size calculated as necessary to give the study sufficient power. All the other units of the study were randomly selected using a random numbers table.

The catchment area of the selected school comprised thirteen squares (clusters). Each square comprises approximately ten smaller agglomerates of houses named “conjuntos” totalling 130 agglomerates, with a total population of approximately 30,000 people served by one health centre, which provides primary health care for this population.

### **Secondary unit selection - The classes of students and the squares (clusters) where the elders lived**

#### **Student sample**

The selected school had five classes of students in the eighth grade and six classes of student in the seventh grade, totalling eleven classes of adolescent ranging in age from 12 to 18 years old. One class was randomly selected for the pilot study. The remaining 10 classes, with a total of 270 students were selected for the study. Of these, 256 students answered self administered questionnaires during class time, reaching a 95 per cent response rate. Losses were mainly due to absenteeism and only four were due to refusal. After finishing the survey, the classes were randomly divided into two groups of five: one group took part in the intervention and the other group was the control. Classes instead of subjects were



chosen as a strategy to prevent allocation of students from the same classes to different groups, which would increase the possibility of contamination of control group. After the intervention 215 Students answered the same questionnaire. Losses were caused by students moving school. Only one loss was due to refusal.

### **Elderly people**

On average each agglomerate (conjunto) of the squares (clusters) comprises approximately 45 lots in which one or more families live with a mean of 5 persons each. This leads to an average population of 225 people in each agglomerate. Considering these numbers and considering the estimated population of elderly around 4% in Ceilândia in 2002<sup>21</sup>, it was estimated that the selection of three squares out of the thirteen would be enough to reach the sample size required for the study.

### **Tertiary unit selection – Households with at least one elder person**

After selecting the primary and secondary units, the interviewers visited all 1,188 households in 27 agglomerates (conjuntos) of the catchment area of the school. From these agglomerates, 258 households including at least one person aged 60 or over were identified. The interviewers listed 321 elders. In the case of more than one elder living in the same household, all of them were invited to take part in the study. From this list a sample of 21 elder subjects was randomly selected for the pilot study. From the 300 elders left, 24 could not be interviewed for different reasons including, hospital admission, travelling and refusals, and 10 were not eligible according to exclusion criteria which included: elders already participating in any reminiscence programme, severe alcoholism, severe speech impairment, severe memory impairment, and/or bedridden due to serious illness. This led to a percentage loss of 9%. Following this sampling design 266 elders were interviewed at home. The choice for agglomerates of households instead of subjects for the study was a strategy to prevent allocation of elders living in the same agglomerate and in the same household to different groups, which could lead to contamination of the control group. After intervention 239 elders from the same sample interviewed at baseline answered the same questionnaire to provide data for comparison. Losses were caused for the same reasons as for the baseline data collection.

### **Sample size**

To define the sample size a predicted prevalence around 50% of negative and positive attitudes towards old age and elderly people was decided. This measure was taken as there was no information about the other variables chosen for the study. The prevalence prediction was based on previous prevalence studies of attitudes towards elderly people<sup>22</sup>. Power was estimated using a population proportion with special absolute precision<sup>23</sup>. The estimated sample comprised two groups (control and experimental) of adolescents of a minimum of 120 individuals (total of 240 students) and two groups of elderly people of the same size. The total sample comprised 519 subjects, including elderly people and adolescents. The sample size was calculated to yield 80% of power to detect 10% difference between control and experimental group in attitude towards ageing after intervention at the 5% level ( $\alpha=0.05$ ). Taking into consideration the possibilities of losses the sample size was increased by an additional 20%.

### **Instrument for data collection**

The questionnaires collected information on socio-demographic and economic circumstances, including marital status, household composition, place of origin, education and current or past occupation, sources of income and perceived sufficiency of income for daily expenses. The adolescents were asked additional questions about parental education, occupation and marital status. Information on outcome measures (self rated health, feelings of trust and perceptions of reciprocity and family relationship perception) was collected using, where possible, validated instruments, although not all had been used in similar populations. The question on self-rated health was taken from the Brazilian Old Age Scale (BOAS) developed for a survey in Brazil in 1992<sup>24</sup> with responses categorised as very good, good, fair, bad, or very bad. Questions on the cognitive components of social capital included questions on trust and reciprocity derived mainly from questionnaires used in the American Social General Social Survey<sup>25</sup> and the Health Survey for England<sup>26</sup>. The domain of trust was assessed through direct questions about trusting, family, friends, neighbours and people in general with four categories: “trust completely”, “trust with reservations”, “do not trust” and “do not trust at all”. Two additional questions: “Do you think



most people would try to take advantage of you if they had a chance or would they try to be fair?" And, "Generally speaking, would you say most people can be trusted or that you cannot be too careful in dealing with people?" An additional question on perceptions of honesty was also included: "Generally speaking do you think people are honest?" Responses to these variables were categorised as "Most", "many", "Few", and "None". Perceived norms of reciprocity were assessed by asking if respondents perceived neighbours as being helpful, also categorised as "Most", "many", "Few", or "None". Two questions about people in general was also asked: "Would you say that most of the time people try to be helpful or are they mostly looking out for themselves?" categorised as "Most", "many", "Few", and "None". For the assessment of family relationships, a set of questions was used including a direct questions related to quality of relationship categorised as very good, good average bad and very bad. Improvement of family relationship in the last two months categorised as "improved a lot", "improved", "remained the same" did not improve" and trust in family members categorised as, trust completely, trust with restriction, do not trust, and do not trust at all. "Family" was considered to constitute parents, children grandchildren and grandparents even if they were not living together.

A similar instrument was used for the adolescents. Changes, however, were made to the sections about health status and family relationships. The question relating to more prevalent health conditions in this age group, included feelings of deep sadness or depression, poor concentration, easy irritability, sleep problems, problems with joints and allergy. For the family relationships, talking with parents about sex related matters and general subjects of life were included. Also a set of questions relating to gender roles was included.

### Focus group guide

For the collection of qualitative data after the intervention, a focus group guide was used covering the same topics of the questionnaires used for the qualitative data collection (Box 1). The focus group guide addressed questions in order to provide data related to participants' view of the value of the project for both age groups and the pros and cons of the activities. It also addressed questions related to all outcome variables to generate information to complement the quantitative data.

Ethical approval was obtained from the London School of Hygiene and Tropical Medicine Ethical Committee and the Ethical committee of

#### Box 1. Interview guide for the focus group discussions.

1. What do you think about the project?
2. What did you enjoy about the project?
3. What didn't you enjoy about the project?
4. Do you think other people might benefit from taking part in a project of this kind?
5. To whom would you like to recommend the project?
6. Did the project have any influence in your health?
7. Do you think taking part in the project influenced your ideas about and old age?
8. Do you think taking part in the project had any effect on your relationship with your family?
9. Do you think taking part in the project had any effect on your relationship with your neighbours?
10. Do you think taking part in the project gave you the opportunity to make new friends?
11. Do you think taking part in the project improved your trust in your friends?
12. Do you think taking part in the project improved your trust in your neighbours?
13. Do you think taking part in the project gave you the opportunity to be useful to others?
14. Do you think taking part in the project gave you the opportunity to receive aid from others?
15. Do you think taking part in the project had any effect on your ideas about dating, or about relationships among adolescents? (For the students only).
16. Did the project give you the opportunity to discuss the subject related to sexual matters more openly with your parents? (For the students only).

Brasilia, DF, Brazil. Written consent forms were required from all participants. For the adolescents, written consent forms for their participation were also required from their parents.

### Quality control

Three interviewers were recruited and trained. Initially they conducted a one week pilot study, so as to observe the level of understanding, acceptability and the time spent in filling up the data-collection instrument, as well as to refine the instrument. This pilot test was carried out with one class of students from the same school chosen for the study and with a group of elders resident in the catchment area, who were then excluded from the main study.

All the questionnaires were checked after been completed by the interviewers and by a quality control worker. Ten per cent of the sample of elders were revisited by the researcher co-ordinator for a second interview.

It is known that contamination of control groups is a possibility in a community trial study. For the students, the classes of both control and experimental groups were selected from morning and afternoon. This was an unavoidable limitation as all 8th grades were conducted in the morning and all 7<sup>th</sup> grades in the afternoon. For this reason, care was taken in order to avoid students from control classes taking part in the reminiscence sessions. However, contact between students from different groups was impossible to avoid. For the groups of elders care also was taken so as to prevent the elders from the control group taking part in the intervention.

### Intervention

The intervention comprised participation in a fourteen week series of small-group activities involving elders and adolescents in which reminiscence processes, which mean recalling the past<sup>27,28</sup> were used as a means of interaction. Reminiscence processes were used taking in consideration the value of these practices for the individual and the community as well<sup>27-29</sup>. The sessions were facilitated by seven teachers from the school and a nurse from the neighbouring health centre. All of them were previously trained for this role by the research coordinator during a 20 hours course. Weekly sessions approximately 2 hours long were held at school during class time. A major diffi-

culty was that of the 149 elders allocated to the intervention, only thirty two in fact participated. The activities took place in groups generally including approximately 10 adolescents and 2 elders each. However, this sub division was not strictly followed. The groups were sometimes merged into bigger ones or divided into smaller ones, depending on the number of participants, the subject discussed or type of activity. In the sessions, memory triggers such as interviews, photos, old objects and utensils were used. The groups discussed topics including play and toys, school days, courting, marriage, giving birth, migration, and the construction of Brasilia. The students wrote down the stories told them by the elders and illustrated them with drawings. Cartoons, little books and old toys were made during the workshops. An exhibition of the products of the workshops was organised at the end of the project.

### Quantitative and qualitative data analyses

The statistical analysis of the quantitative data was carried out using the SPSS statistical package. Initially exploratory descriptive analysis was undertaken so as to assess the frequency of distribution of the variables. Following this analysis a bivariate analysis, using Chi-square tests to test for differences between groups was carried out.

Following the bivariate analysis, multivariate analysis using logistic regression was used to analyse differences between the intervention and control groups on outcome measures, and change in outcome measures adjusting for possible confounding factors.

The effect of the intervention from the quantitative analysis was tested by comparing dichotomised outcomes in the intervention and control groups at endline, using logistic regression. The variables were analysed individually. As compliance among the elders intervention group was low, before comparing intervention and control groups at follow up, the differences between compliant and non-compliant group was assessed using Chi-square tests. The compliant group included significantly more people who were unmarried and, more who lived alone.

As a strategy to minimize the effect of the selection bias occasioned by low participation of elderly people, in the main analysis of results it was compared those elders assigned to the control group with those assigned to the intervention group, which is described in clinical trials as "In-

tention to Treat analysis" (ITT), which means that all subjects assigned for the experimental group are considered in the analysis regardless of their participation.. Additionally the control group was compared with those who actually took part in the intervention described as Per Protocol analysis (PP) and report on relevant differences between the sets of results where appropriate<sup>13,14</sup>.

Qualitative data collection was undertaken using focus group techniques with the sample selected for the experimental group of the community trial study. A total of 15 groups were conducted: ten groups of students, four groups of elders and one group of facilitators. All groups, except that of facilitators were stratified by gender. The groups of students comprised a mean of ten respondents each. The groups of elders comprised a mean of six subjects and the group of facilitators included seven participants. All elder participants were invited for the groups. The students were randomly selected from the intervention classes. It was not necessary to conduct focus group with the subjects assigned for control group of randomised study as the interview guide was related to participation in the intervention. On the other hand, in qualitative pre-test-post test studies the individuals are able to compare their opinions pre and post taking part in the activities.

Each focus group was attended by a facilitator and an observer. The discussions were facilitated by the research co-ordinator. The observer was a college student who was trained in that research technique. She recorded group activities and conversations. She also was responsible for the tape transcriptions. The group discussions took place at the school. Participants were informed about the tape recorder. However, they were assured that confidentiality and anonymity would be maintained at all times. The tapes were transcribed verbatim. The transcribed texts were formatted and entered to NU\*DIST 5 package for coding. The analysis was based on grounded theory<sup>30</sup> and thematic analysis.

### Process observation

Process observation was used to monitor the intervention phase of the intergenerational research project, giving an overview of each stage of its development, the difficulties encountered, and strategies adopted to overcome them. It drawn detailed notes kept by the research coordinator during the sessions, informal group discussions

after the sessions, comments made by teachers, school domestics and project participants, session forms completed by group facilitators and also on information derived from a diary written by the project assistant.

### Results and discussion

The results were analysed comparing findings from both methodology, quantitative and qualitative as required in a triangulation. The findings from the adolescents suggested a positive statistically significant relationship of the intervention on self rated health status and attitudes towards elderly people. These findings were confirmed by the qualitative results which added additional findings related to norms of reciprocity and family relationships improvement. This may be because participation and the interest taken in them by the elders may have increased their feelings of self worth and overall well-being. Also because, the project gave them the opportunity to express themselves which contributed for their well being. In relation to attitudes it was clear that most of the young people had negative attitudes towards elderly people before participating in the intergenerational activities. But taking part in the project lead them to reflect that not all elders are the same, what is the case for people of any age, they concluded. However the adolescents in the intervention group were also more likely than controls to report that they considered most people to be selfish. Possibly, this reflected increased awareness of age discrimination, a trend noted in studies undertaken with British youth<sup>31</sup>.

The results suggested statistically significant effect of the intervention on older people's perceptions of neighbours' helpfulness, the honesty of most people in general, and reported good or very good family relationships<sup>14</sup>. Mechanisms underlying these changes include the elder participants strengthening their relationship with neighbours and developing confidence and positive attitudes towards social interactions as a result of the experience of sharing their knowledge and receiving positive feedback from the adolescents, as suggested by focus group discussion. The qualitative analysis also showed an improvement of the self rated health status, and attitudes towards adolescents from the qualitative analysis specially for woman. However neither quantitative nor qualitative finds suggested improvement of participants' trust in people in general. This happened, as mentioned by both age groups because

trusting others require time. As all groups complained about the short duration of the project, this should justify why this variable was not affected by the intervention. Details of results analysed in the light of the theoretical framework of the study are described elsewhere<sup>13</sup>.

### **The limitations of the study**

The study had some limitation including the small number of elders who participated which might have reduced the power of the study to detect changes and weakened the investigation.. To persuade people to join a community programme takes time, and can only advance when participants start trusting the idea and reporting the benefits they are receiving to others in the neighbourhood.

Another limitation is related to the duration of the activities. It is possible that the short length of the intervention was not enough to lead to the kind of changes in all outcome variables.

### **Conclusion**

Although the study had some limitations, the combination of quantitative and qualitative data gave the opportunity to examine most results and the possible reasons why and how some changes occurred and why other expected results did not. It was also possible to examine rather than reject the unexpected results. The analysis of the association between intervention and outcome variables suggested that the intervention changed some aspects of adolescents' and elders' lives. The combination of methods and the development of a theoretical framework were important to explain and to trace the possible pathways, which led to changes.

This was the first time a combination of methods involving a controlled trial was used to evaluate an intergenerational project. This is important as to an increasing extent, service providers and policy makers require an evidence base before deciding on new initiatives and, randomised controlled trials are regarded by many as the 'gold

standard' by which evidence should be evaluated. However, a further important message of the research was that qualitative approaches are essential too in order to identify underlying processes and detect more subtle changes. The use of a triangulation seems to be useful in health promotion programmes evaluation. This study showed the importance of methodological combination for a better understanding of results and the mechanisms of changes in a psychosocial community intervention.

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