

ISSN: 2162-5336 Volume 6, Number 11, November 2016



# Open Journal of Nursing



ISSN: 2162-5336



[www.scirp.org/journal/ojn](http://www.scirp.org/journal/ojn)

# Journal Editorial Board

ISSN 2162-5336 (Print) ISSN 2162-5344 (Online)

<http://www.scirp.org/journal/ojn>

---

## Editor-in-Chief

**Prof. Geraldine (Jody) Macdonald** University of Toronto, Canada

## Editorial Board

<b>Prof. Lora L. H. Beebe</b>	University of Tennessee, USA
<b>Prof. Shu-Li Chen</b>	South College, USA
<b>Dr. Rie Chiba</b>	Jichi Medical University, Japan
<b>Dr. Rose E. Constantino</b>	University of Pittsburgh, USA
<b>Prof. Lucille Sanzero Eller</b>	The State University of New Jersey, USA
<b>Prof. Ganga Mahat</b>	The State University of New Jersey, USA
<b>Dr. Donna Felber Neff</b>	College of Nursing University of Florida, USA
<b>Prof. Patricia Newcomb</b>	University of Texas at Arlington, USA
<b>Dr. Sheila O'Keefe-McCarthy</b>	Trent University, Canada
<b>Dr. Solina Richter</b>	University of Alberta, Canada
<b>Prof. Donna M. Wilson</b>	University of Alberta, Canada

# Table of Contents

**Volume 6    Number 11**

**November 2016**

## **Sociodemographic Characteristics Related to Resistance to Breast Cancer Screening**

C. N. S. de Sousa, C. M. C. de Santiago, C. S. M. de Holanda, J. B. L. de Carvalho, J. M. R. Justino, F. R. R. Morais.....911

## **Early Life Stress as Factor for Use of Psychoactive Substances: Integrative Review**

L. B. H. Gimenez, R. C. C. P. Silveira, D. C. A. Silva, E. C. S. Gherardi-Donato.....921

## **Development of Subacute and Complex Care Programs at the Community Level**

R. Lagoe, C. Noetscher, S. Littau.....937

## **Physical Accessibility for Disabled People: Analysis of Toilet Facilities in Primary Health Care Units**

A. C. E. Áfio, L. V. de Carvalho, J. F. Marques, P. M. P. de Oliveira, P. C. de Almeida, L. M. F. Pagliuca.....948

## **Effects of Band Therapy Using Music on Grasping Power, Depression, and Personal Relationships in Nursing-Home-Dwelling Elderly Individuals**

E. K. Chang, H. Park, M. Jung, H. K. Lee, J. Park, M. Park, M. Gang.....958

# Open Journal of Nursing (OJN)

## Journal Information

### SUBSCRIPTIONS

The *Open Journal of Nursing* (Online at Scientific Research Publishing, [www.SciRP.org](http://www.SciRP.org)) is published monthly by Scientific Research Publishing, Inc., USA.

#### Subscription rates:

Print: \$79 per issue.

To subscribe, please contact Journals Subscriptions Department, E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### SERVICES

#### Advertisements

Advertisement Sales Department, E-mail: [service@scirp.org](mailto:service@scirp.org)

#### Reprints (minimum quantity 100 copies)

Reprints Co-ordinator, Scientific Research Publishing, Inc., USA.

E-mail: [sub@scirp.org](mailto:sub@scirp.org)

### COPYRIGHT

#### Copyright and reuse rights for the front matter of the journal:

Copyright © 2016 by Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY).

<http://creativecommons.org/licenses/by/4.0/>

#### Copyright for individual papers of the journal:

Copyright © 2016 by author(s) and Scientific Research Publishing Inc.

#### Reuse rights for individual papers:

Note: At SCIRP authors can choose between CC BY and CC BY-NC. Please consult each paper for its reuse rights.

#### Disclaimer of liability

Statements and opinions expressed in the articles and communications are those of the individual contributors and not the statements and opinion of Scientific Research Publishing, Inc. We assume no responsibility or liability for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained herein. We expressly disclaim any implied warranties of merchantability or fitness for a particular purpose. If expert assistance is required, the services of a competent professional person should be sought.

### PRODUCTION INFORMATION

For manuscripts that have been accepted for publication, please contact:

E-mail: [ojn@scirp.org](mailto:ojn@scirp.org)

# Sociodemographic Characteristics Related to Resistance to Breast Cancer Screening

Carla Nadja Santos de Sousa<sup>1</sup>, Cintia Mikaelle Cunha de Santiago<sup>2</sup>,  
Cristianny Samara Miranda de Holanda<sup>3</sup>, Jovanka Bittencourt Leite de Carvalho<sup>4</sup>,  
Jéssica Micaele Rebouças Justino<sup>5</sup>, Fátima Raquel Rosado Moraes<sup>6</sup>

<sup>1</sup>The Vale do Jaguaribe College, The State University of Rio Grande do Norte (UERN), Natal, Brazil

<sup>2</sup>Doutoranda no Programa Bioquímica e Fisiologia da UFPE-PE, The State University of Rio Grande do Norte (UERN), Natal, Brazil

<sup>3</sup>The Federal University of Rio Grande do Norte, Natal, Brazil

<sup>4</sup>The Postgraduate Program in Nursing of the UFRN-RN, Health School, The Federal University of Rio Grande do Norte, Natal, Brazil

<sup>5</sup>The State University of Rio Grande do Norte (UERN), Natal, Brazil

<sup>6</sup>Health and Society of the State University of Rio Grande do Norte, Natal, Brazil

Email: carlanadja@hotmail.com, cintia\_mikaelle@hotmail.com, csmhn@hotmail.com, jovanka@es.ufrn.br,

jessicajustino\_@outlook.com, fraquelrm@gmail.com

**How to cite this paper:** de Sousa, C.N.S., de Santiago, C.M.C., de Holanda, C.S.M., de Carvalho, J.B.L., Justino, J.M.R. and Moraes, F.R.R. (2016) Sociodemographic Characteristics Related to Resistance to Breast Cancer Screening. *Open Journal of Nursing*, 6, 911-920.

<http://dx.doi.org/10.4236/ojn.2016.611088>

**Received:** October 5, 2016

**Accepted:** November 1, 2016

**Published:** November 4, 2016

Copyright © 2016 by authors and  
Scientific Research Publishing Inc.  
This work is licensed under the Creative  
Commons Attribution International  
License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

**Objective:** To describe the sociodemographic characteristics of women related to resistance to breast cancer. **Methods:** Cross-sectional study, with a quantitative approach, whose research took place in the Basic Family Health Units of the municipality of Mossoró. The study included 362 women aged between 40 and 69 years. One used a validated questionnaire with questions divided into five blocks. The data were entered in a spreadsheet, transferred to the SPSS software, and subsequently coded to perform the analysis. The Research Ethics Committee of the State University of Rio Grande do Norte, in Opinion No. 356958, approved the project. **Results:** Black women were two times more likely to be resistant when compared to white women (OR = 2.01, 95% CI = 1.12 - 3.69; p = 0.018). Women who have studied up to primary school 122 (58.1%) were two times more likely to be resistant when compared to those 14 (6.7%) who studied up to higher education (OR = 2.69; 95% CI = 1.31 - 5.48; p = 0.012). Women who had first-degree relatives with breast cancer 153 (72.9%) were three times more likely to be resistant. **Conclusions:** The findings show the need for investments in educational practices with a view to public awareness and professionals' training to disseminate information regarding tests used in practice directed to women's health.

## Keywords

Screening Programs, Breast Cancer, Health Services, Oncology Nursing

## 1. Introduction

Currently, breast cancer (BC) is the most often diagnosed malignancy in women world-wide. There is a significant increase in the number of new cases of the disease in both developed as developing countries and, considering only demographic changes, one expects an increase of 55% in the incidence and 58% in the mortality in developing countries by 2020 [1].

The coping strategies of BC follow methods of primary and secondary prevention. The role of primary prevention is to modify or eliminate risk factors and the secondary is part of the early diagnosis and treatment of cancer [2].

It is noteworthy that there is no flawless method regarding primary prevention for BC. However, in secondary prevention, there are three strategies for early detection: the breast self-examination (BSE), the clinical breast exam (CBE) and mammography (MMG). The MMG, for its impact on mortality, is the chosen screening method in population programs [3].

## 2. Review of Literature

BC early tracking concerns the active search for new cases in a presumably asymptomatic population, looking for individuals who have a potential risk of developing certain cancer, even before signs and symptoms become evident, subjecting them to screening tests to detect cancer (or cancer predecessors lesions) and fully providing a follow-up, organizing referrals for diagnostic confirmation and treatment [4] [5].

Thus, screening programs aims to influence mortality rates, from early diagnosis, and, thus, cause less physical, mental and social damage arising from more aggressive therapies [6]. Therefore, screening programs provide improved prognosis through early detection and treatment providing less mutilating and aggressive effects for women.

In order to make the Breast Cancer Screening (BCS) possible, the care network needs to organize around the Family Health Strategy (FHS), a model based on primary health care. The municipality must also have, in its environment, capacity to perform the necessary MMG examinations [7].

However, apart from the need to organize the care network, it is necessary to reflect other aspects that relate to resistance of women to BCS, as well as lifestyle and sociodemographic characteristics. The resistance of someone or a group is the expression of the internal relationship system that the person or group has with the world and, in turn, interferes with the form of participation in those spaces [8]. While a situation of compromise, resistance tends to provide us with the necessary elements to understand how the subject or the group builds the perception of themselves and their reality, as well as interacts on issues/aspects that are the focus of that resistance.

By understanding the importance of grasping the aspects that hamper the daily flow of action, particularly in the adherence of the users in the practices of services, one decided to develop this study, with the objective of describing the sociodemographic characteristics of women related to resistance to tracking breast cancer.

### 3. Methods

Cross-sectional study, with a quantitative approach, whose empirical research took place in the Family Basic Health Units (BFHU) in the city of Natal, in the period from June to November 2014.

In order to compose the locus of such research and for better definition of the sample, one observed that, in health area, Mossoro is divided into six zones and 43 UBS, which, in turn, are distributed among urban and rural areas and their neighborhoods. Among the existing BFHU in the city, there was a random selection of four units, one in each zone, namely: Dr. Chico Costa, Vereador Durval Costa, Marcos Raimundo da Costa and Dr. Cid. Salem Duarte. They are located, respectively, in the following districts of the city: Santo Antônio, Liberdade II, Belo Horizonte, Abolição IV.

For the delimitation of the sample, the following inclusion criteria were: being a woman aged between 40 and 69 years, as recommended by the Ministry of Health (MOH), residing in one of the areas covered by the defined BFHU and being registered at the Family Health Strategy (FHS) in one of the neighborhoods of the chosen units. As for the exclusion criteria, they were: women who had performed CBE and MMG in the past year, because the MOH recommends that the average time may not exceed the maximum period of two years; women who were unable to answer the information covered in the questionnaire and who used psychotropic and/or hallucinogenic drugs. In the end, the sample consisted of 362 women.

The used research tool was a structured questionnaire from a doctoral thesis entitled “Early detection of breast cancer: knowledge and practices of women and FHS professionals in Dourados/MS.” It is noteworthy that this study used the adapted version of the instrument, with the insertion of block 5 [9].

With the aforementioned addition, there was division of the instrument into five blocks of questions: 1) sociodemographic profile; 2) information about the knowledge and practices related to the BC; 3) information regarding the knowledge and practices related to methods for early detection of BC; 4) information on the use of health services related to BC; 5) characteristics of the woman resistant to BCS.

Among the different issues of the instrument, the questions that best characterized the women as resistant to the BCS were listed, based on the objectives of this research and on the Document that defines the Brazilian strategy for the control of BC [10]. In that document, the MMG and the BCE are the methods recommended for BC screening in routine of comprehensive care to women’s health [11]. This study characterized women as resistant to BCS if responses to the block 5 were all negative.

The data were entered in a spreadsheet, and then transferred to the SPSS software (version 22.0, SPSS, Inc., Chicago, IL, USA) subsequently coded to perform the analysis. Several groups were compared, obtaining odds ratio (OR), confidence interval (CI) of 95% and p-value, through the significance determined using Chi-square test ( $\chi^2$ ) and Fisher’s exact test. This last test was used when verifying values with expected frequency lower than five. The Research Ethics Committee (CEP) of the State University of Rio Grande do Norte, in Opinion No. 356,958, approved the project.



## 4. Results

By the cuts that were possible for the theme analysis: women resistance to the BCS, a first comparison was performed (**Table 1**) regarding sociodemographic characteristics and resistance to BCE among women of this investigation.

Thus, **Table 1** results from the univariate analysis, which deal with already-mentioned issues, showing that, among the sample of 362 women, 210 (58.0%) were resistant to tracking the BC at the expense of 152 women (42.0%) who showed no resistance to the BCS. It is noteworthy that we will emphasize the data that showed greater resistance to BCS.

Of the 210 resistant women, 101 (48.1%) lived in Santo Antônio neighborhood, with residence time in Mossoró between 31 - 50 years (43.3%). The women had a mean age of  $50.07 \pm 8.76$  years (mean  $\pm$  standard deviation). As for education, 195 (92.9%) reported having studied and/or still study. Regarding marital status, 144 (68.6%) women reported having a partner, 135 (64.3%) worked outside the home and 152 (72.4%) had owned housing (**Table 1**).

Among the 210 women resistant, 101 (48.1%) lived in Santo Antonio neighborhood. Study pointed out that the Santo Antônio neighborhood is the largest of Mossoró, with high incidence of cancer patients in relation to the distribution of patients affected by cancer in the neighborhoods, in addition to having a population with low level of education, low and middle income, so those factors relate to women's resistance [12].

The skin color of 83 women (39.5%) was white and 82 (39.0%), black. Regarding education, 122 (58.1%) reported studying up to elementary school and only 14 (6.7%) had higher education. In terms of the kinship degree, 72 (34.3%) reported having relatives with breast cancer and 107 (51.0%) said they had no relative (**Table 1**).

**Table 2** shows the results of the multivariate logistic regression analysis on the resistance of women related to BCS as the response variable. This table addressed only the results of statistically significant associations related to resistance to the BCS, namely: skin color, education and kinship degree.

Regarding skin color, black women were two times more likely to be resistant when compared to white women (OR = 2.01, 95% CI = 1.12 - 3.69;  $p = 0.018$ ). Statistics show that in the city of Mossoró-RN, where the study was conducted and in private households, 38,081 families have black skin color or belong to the black race, whereas there are 27,702 white families [13] Such characterization demands a different look in the construction of public policies for the region in view of the need to reflect and list the specificities of the groups and, thus, propose action strategies that meet their demands.

## 5. Discussion

The fact that black women are more resilient may relate to several factors. Black women experience different types of race and gender discrimination, which, when intersect, harm their integration into society as someone who has rights, especially in relation to health inequalities imposed by racism and sexism differentiate women access to health services, as well as in the disease process [14].



**Table 1.** Sociodemographic characteristics resistant women to the thebreast cancel screening.

Variable	Yes	OR	CI 95%	p-value
Neighborhood				
Santo Antônio	101 (48.1)	1		
Liberdade II	31 (14.8)	0.66	0.37 - 1.18	0.107
Abolição IV	41 (19.5)	1.55	0.82 - 2.93	
Belo Horizonte	37 (17.6)	0.76	0.43 - 1.34	
Residence time				
1 - 31 years	89 (42.4)	1.58	0.86 - 2.91	0.149¥
31 - 50 years	91 (43.3)	1.37	0.75 - 2.50	
Over 50 years	30 (14.4)	1		
Age				
Up to 50 years	112 (53.3)	1.08	0.71 - 1.64	0.704
Over 50years	98 (46.7)	1		
Marital Status				
With partner	114 (68.6)	1.10	0.70 - 1.72	0.670
Without partner	66 (31.4)	1		
Skin color				
White	83 (39.5)	1.43	0.85 - 2.41	0.016*
Black	82 (39.0)	2.23	1.28 - 3.88	
Brown	45 (21.4)	1		
Went to school				
Yes	195 (92.9)	1.21	0.56 - 2.63	0.620
No	15 (7.1)	1		
Education				
Elementary school	122 (58.1)	2.69	1.31 - 5.48	0.012*
High school	74 (35.2)	2.87	1.35 - 6.08	
Higher education	14 (6.7)	1		
Works outside the home				
Sim	75 (35.7)	0.98	0.63 - 1.51	0.927
Não	135 (64.3)	1		
Owned housing				
Yes	152 (72.4)	0.96	0.60 - 1.54	0.892
No	58 (27.6)	1		
Relative with breast câncer				
Yes	57 (27.1)	0.97	0.61 - 1.55	0.918
No	153 (72.9)	1		
Kinship degree with the relative with breast cancer				
1st degree	72 (34.3)	3.30	1.89 - 5.75	<0.0001*
2nd degree	31 (14.8)	1.06	0.59 - 1.90	
Do not have relative	107 (51.0)	1		

Source: Data collected from the users of the health units of Mossoró-RN.

**Table 2.** Multivariate analysis regarding sociodemographic characteristics resistant women to the breast cancer screening.

Variable	Adjust. OR.	CI-95%	P
Skin color			
White	1.16	0.67 - 2.00	0.594
Black	2.01	1.12 - 3.69	0.018
Brown	1		
Education			
Elementary school	3.20	1.49 - 6.86	0.003
High school	3.85	1.72 - 8.65	0.001
Higher education	1		
Kinship degree with the relative with breast cancer			
1st Degree	3.85	2.13 - 6.98	<0.001
2nd Degree	1.09	0.60 - 1.98	0.767
Do not have relative	1		

Source: Data collected from the users of the health units of Mossoró-RN.

A study published in the Journal Cancer Epidemiology, Biomarkers & Prevention revealed a genetic mutation that affects Afro-descendant families. Specifically, black women are more likely to have breast cancer diagnosis than white women before 40 years. Study addresses that African-American women are prone to a most unpleasant type of breast cancer [15].

Thus, the study shows evidence to explain that resistance in black women, possibly due to genetic differences, disparities in obtaining medical care, receiving inferior treatment or low adherence to prevention methods [15].

Therefore, since people cannot change genetics, black women should pay more attention to the prevention of breast cancer, which includes, besides the preventive exams, maintaining a healthy weight, exercise regularly, limit consumption of tobacco and alcohol, avoid trans-fat and even processed foods, too much salt and sugar in the diet.

Another study also reflects that black women do not receive the same standard of care than white women and, possibly, when taking into account the color indicator, there might be more worrying data related to social inequalities in access to various services, including health [16].

With regard to class and gender indicators, studies also hardly incorporate in their proposals to the specific health of black women. The studies that use the concept of gender to study health and disease are still recent. Those that already exist usually show the social conditions, lifestyle, and how knowledge about health interferes in the health/disease [17].

Women who have studied up to primary school 122 (58.1%) were two times more likely to be resistant when compared to those 14 (6.7%) who studied up to the higher

education (OR = 2.69; 95% CI = 1.31 - 5.48;  $p = 0.012$ ). As for women who have studied up to high school 74 (35.2%) were two times more likely to be resistant when compared to those 14 (6.7%) who studied up to the higher education (OR = 2.87, 95% CI = 1.35 - 6.08;  $p = 0.012$ ) (**Table 2**).

Individuals with higher levels of education tend to be healthier than individuals with lower levels of education. Researches have shown significant correlations between education and mortality, heart disease, cancer, diabetes, lost workdays, smoking, alcohol consumption and self-reported health problems [18].

Therefore, the highest level of education is a determining factor in the search for better living conditions and, consequently, better quality of life. In this respect, it is possible to infer the existence of a relationship between low family income, low education and BC, for those two factors hinder access to information about prevention and treatment, reducing the demand for health services [19].

Education also correlates with the use of preventive care services; individuals with higher levels of education perform more preventive practices, such as flu shots, mammograms, Pap tests and colonoscopies [19].

Thus, knowledge and insight to decision-making, as a rule, relate to the level of education acquired by the individual. If women receive information about prevention methods for the BCS, they will certainly have knowledge and insight to determine their attitudes and practices in the prevention of the disease. Therefore, one observed that the higher education improves the chance of a woman to undergo CBE and MMG [20].

A study developed by Schneider and D'Orsi (2010) points out that illiterate women have risk of mortality from BC is 7.4 times higher than in women with higher education. As for those with incomplete primary education, the risk is 3.76 times greater. Women with higher income and education, who have more knowledge, adhere more often to preventive practices. That research corroborates this fact, because the resistance is directly proportional to the few years of formal study, which suggests that the poor knowledge about cancer contributes in a unique way in the search for preventive practices for cancer and perhaps other diseases [21].

Another dimension that made women more resistant to practice the BCS was the presence of relatives of first degree with BC. There were 153 (72.9%) women who were three times more likely to be resistant when compared to those 107 (51.0%) women who had no relatives of first degree with cancer (OR = 3.30; 95% CI = 1.89 - 5.75;  $p = <0.0001$ ) (**Table 2**).

Those findings are worrisome because the most resistant women were precisely those who had first-degree relative with BC. However, those women identified as more resistant, should receive more education and take extra care regarding the adherence to screening practices, because the risk of a woman developing BC is higher among those who had the disease in first-degree relatives (mother, sister or daughter) [22].

Study shows the rarity of cases of certain cancers exclusively by hereditary, family and ethnic factors. In the case of breast cancer, family history, especially in first-degree relatives younger than 50 years, is an important risk factor (4). It points out that the

risk of disease almost doubles; and having two first-degree relatives increases the risk by about three times [23].

In this reading, it is essential that health professionals, as well as the production of policies in the area, reflect those limitations and adopt action strategies to make family members, especially women, aware of the risks and perform preventive practices. Those actions would possibly make women less resistant to BC screening practices. Therefore, the information research during medical and nursing consultations is extremely valuable because the bond built between professionals and users is a great tool for knowledge of the population's real needs and questions.

## 6. Conclusions

The sociodemographic profile showed that black women, with educational attainment up to elementary school and family with BC were considered resistant to tracking, reinforcing the impact of social determinants on the health of the female population.

Thus, the found data highlight the need for investment in educational practices focused on the population awareness and training of professionals, because the bond built between them characterizes as a tool to disseminate information regarding tests used in practices aimed at woman's health.

Therefore, although being a disturbing and challenging process, it is necessary that the health teams from BFHU ensure adherence of women to preventive care. It is noteworthy that the educational activity with client-professional mutual respect is an important strategy to understand the importance of preventive screening and for women to feel motivated to accomplish it, overcoming any difficulties, such as those identified in the study.

## References

- [1] International Agency for Research on Cancer (IARC) (2008) World Cancer Report. Lyon.
- [2] Borges, *et al.* (2012) Prevalence of Pap Smear for Cervical Cancer. *Cad Public Health, Rio de Janeiro*, **28**, 1156-1166.
- [3] Carlson, R.W., *et al.* (2009) Breast Cancer. Clinical Practice Guidelines in Oncology. *Journal of the National Comprehensive Cancer Network*, **7**, 122-192.
- [4] Brazil Ministry of Health (2012) Cancer ABC: Basic Approaches to Cancer Control. National Cancer Institute José Alencar Gomes da Silva, General Coordination Actions, Rio de Janeiro.
- [5] Silva, R.C.F. and Hortale, V.A. (2012) Breast Cancer Screening in Brazil: Who, How and Why? *Journal of Oncology*, **58**, 67-71.  
[http://www1.inca.gov.br/rbc/n\\_58/v01/pdf/10b\\_artigo\\_opinioao\\_rastreamento\\_cancer\\_mama\\_brasil\\_quem\\_como\\_por\\_que.pdf](http://www1.inca.gov.br/rbc/n_58/v01/pdf/10b_artigo_opinioao_rastreamento_cancer_mama_brasil_quem_como_por_que.pdf)
- [6] Oshiro, M.L., *et al.* (2014) Advanced Breast Cancer as Event Sentinel Evaluation of Early Detection Program Breast Cancer in the Midwest of Brazil. *Journal of Oncology*, **60**, 15-23.  
[http://www.inca.gov.br/rbc/n\\_60/v01/pdf/04-rtigo-cancer-de-mama-vancado-como-evento-sentinela-para-avaliacao-do-programa-de-Detection-early-from-cancer-breast-on-Midwest-the-brasil.pdf](http://www.inca.gov.br/rbc/n_60/v01/pdf/04-rtigo-cancer-de-mama-vancado-como-evento-sentinela-para-avaliacao-do-programa-de-Detection-early-from-cancer-breast-on-Midwest-the-brasil.pdf)
- [7] Fernandes, T.H.E., *et al.* (2010) Analysis of the Prevalence of Monographic Surveys Carried

- out in the Public Health System of Acre, Amazon, Brazil, Using the BI-RADS®. *Revista Brasileira de Mastologia*, **20**, 71-75.
- [8] Pereira, L.S., *et al.* (2012) Motivation of Individuals and Maringa Groups. University Center of Maringá, Center for Distance Education.
  - [9] Batiston, A.P. (2009) Early Detection of Breast Cancer: Knowledge and Practice of Women and Health Strategy for the Professional Family in Dourados/MS. Large Field. Doctoral Thesis, Multi-Institutional Program of Graduate Studies in Health Sciences, Covenant Network Midwest, University of Brasília, Federal University of Goiás and the Federal University of MatoGrosso South.
  - [10] Brazil (2004) Ministry of Health Secretariat of Health Care National Cancer Institute. INCA. Control of Breast Cancer: Consensus Document. National Cancer Institute, Rio de Janeiro (RJ).
  - [11] Brazil Ministry of Health (2013) National Cancer Institute. Estimate 2014: Cancer Incidence in Brazil. INCA, Rio de Janeiro.  
[http://www2.inca.gov.br/wps/wcm/connect/0129ba0041fbbc01aa4fee936e134226/Apresentacao+Estimativa+2014\\_final+corrigido+tireoide.pdf?MOD=JPERES&CACHEID=129ba0041fbbc01a4fee936e134226](http://www2.inca.gov.br/wps/wcm/connect/0129ba0041fbbc01aa4fee936e134226/Apresentacao+Estimativa+2014_final+corrigido+tireoide.pdf?MOD=JPERES&CACHEID=129ba0041fbbc01a4fee936e134226)
  - [12] Sousa, C.N.S., *et al.* (2016) Epidemiology of Cancer: Study in a Hospital Oncology and Hematology. *Rev Nurse UFPE Online*, **6**, 983-989.  
[www.revista.ufpe.br/revistaenfermagem/index.php/revista/.../3680](http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/.../3680)
  - [13] Brazilian Institute of Geography and Statistics (IBGE) (2016) Estimates of Resident Population with Reference Date 1 July 2014 Published in the Official Gazette on 08/28/2014.  
[http://www.ibge.gov.br/home/estatistica/populacao/estimativa2014/estimativa\\_tcu.shtm](http://www.ibge.gov.br/home/estatistica/populacao/estimativa2014/estimativa_tcu.shtm)
  - [14] Goes, E.F. and Nascimento, E.R. (2013) Black and White Women and Levels of Access to Preventive Health Services: An Analysis of Inequalities. *Rev Health Debate*, **37**, 571-579.
  - [15] Maggie, F. (2015) Black Women More Likely to Get Wrong Breast Cancer Care, Study Confirms. NBS News.  
<http://webcache.googleusercontent.com/search?q=cache:MR0esgSrRNYJ:www.nbcnews.com/health/cancer/black-women-more-likely-get-wrong-breast-cancer-care-study-n443541+&cd=1&hl=en&ct=clnk&gl=us>
  - [16] Santis, C.E.A. (2015) Breast Cancer Statistics. *Cancer Journal for Clinicians*, American Cancer Society, Atlanta.  
<http://www.cancer.org/cancer/news/news/report-breast-cancer-rates-rising-among-african-american-women>
  - [17] Almeida, M.C.P. and Abrantes, E.S. (2011) XI Luso Afro Brazilian Social Sciences. Gender and Health: The Role of Black Women in the Healing Practices of Traditional African Medicine: A Study of the Black Community in Palmeirândia-Maranhão.
  - [18] Fletcher, J.M. and Frisvold, D.E. (2012) Higher Education and Health Investments: Does More Schooling Affect Preventive Health Care Use? *J Hum Cap*, **3**, 144-176.  
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3285406/>
  - [19] Lima, A.L.P., *et al.* (2011) Opportunistic Screening for Breast Cancer among Young Women in the State of Maranhão, Brazil. *Cad Public Health*, **27**, 1433-1439.  
<http://www.scielo.org/pdf/csp/v27n7/18.pdf>
  - [20] Schneider, I.J.C. and D'Orsi, E. (2010) Survival in Five Years and Prognostic Factors in Women with Breast Cancer in Santa Catarina, Brazil. *Cadernos de Saúde Pública*, **25**, 1285-1296. <http://www.scielo.br/pdf/csp/v25n6/11.pdf>  
<http://dx.doi.org/10.1590/S0102-311X2009000600011>

- [21] Araújo, G.F. and Davim, R.M.B. (2012) Breast Self-Examination Practiced by Nursing Professionals in Family Health Units. *Journal of Nursing UFPE*, **6**, 759-765.  
<http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/2321/pdf>
- [22] Radünz, V. and Rose, L.M. (2012) Survival Rate in Women with Breast Cancer: A Review Study. *Text & Context Nursing*, **21**, 980-989.
- [23] Institute Oncoguia. Risk Factors of Breast Cancer.  
<http://www.oncoguia.org.br/conteudo/cancer-de-mama/1411/31/.2015>



Scientific Research Publishing

**Submit or recommend next manuscript to SCIRP and we will provide best service for you:**

Accepting pre-submission inquiries through Email, Facebook, LinkedIn, Twitter, etc.

A wide selection of journals (inclusive of 9 subjects, more than 200 journals)

Providing 24-hour high-quality service

User-friendly online submission system

Fair and swift peer-review system

Efficient typesetting and proofreading procedure

Display of the result of downloads and visits, as well as the number of cited articles

Maximum dissemination of your research work

Submit your manuscript at: <http://papersubmission.scirp.org/>

Or contact [ojn@scirp.org](mailto:ojn@scirp.org)



# Early Life Stress as Factor for Use of Psychoactive Substances: Integrative Review

Larissa Bessani Hidalgo Gimenez<sup>1</sup>, Renata Cristina de Campos Pereira Silveira<sup>2</sup>,  
Danilo Caetano Albino da Silva<sup>3</sup>, Edilaine Cristina da Silva Gherardi-Donato<sup>1\*</sup>

<sup>1</sup>Department of Psychiatric Nursing and Human Sciences, University of São Paulo at Ribeirão Preto College of Nursing, Ribeirão Preto, Brazil

<sup>2</sup>Department of Fundamental Nursing, University of São Paulo at Ribeirão Preto College of Nursing, Ribeirão Preto, Brazil

<sup>3</sup>Itapevi Diagnostic Imaging Center, São Paulo, Brazil

Email: lari\_gimenez@hotmail.com, \*nane@eerp.usp.br

**How to cite this paper:** Gimenez, L.B.H., Silveira, R.C.C.P., Silva, D.C.A. and Gherardi-Donato, E.C.S. (2016) Early Life Stress as Factor for Use of Psychoactive Substances: Integrative Review. *Open Journal of Nursing*, 6, 921-936.

<http://dx.doi.org/10.4236/ojn.2016.611089>

**Received:** August 5, 2016

**Accepted:** November 1, 2016

**Published:** November 4, 2016

Copyright © 2016 by authors and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

---

## Abstract

**Purpose:** To identify, analyze and synthesize the scientific evidences that support Early Life Stress (ELS) diagnosis using the Childhood Trauma Questionnaire (CTQ), since it assumes the use of psychoactive substances later in adolescence and adulthood. Individuals that experienced some form of childhood stress may present, in adulthood, consequences that manifest into mental disorders such as problematic use of psychoactive substances. **Methods:** An integrative review of the literature on the subject in the databases: PubMed, Web of Science, LILACS and Psycinfo, regards studies that have been indexed in the last ten years (2003-2014). Combination of controlled and uncontrolled factors in the use and abuse of psychoactive substances, CTQ and ELS adapted to each database. **Findings:** The alcohol was the most used drug by the participating subjects of these research; mostly, the use of psychoactive drugs, started when they were still in adolescence; ELS and the later use of psychoactive drugs can be found more frequently in female; the lack of internal resources for dealing with stress in adulthood after ELS occurrence may have as a consequence the use of psychoactive drugs as a coping mechanism. **Conclusions:** It was possible to identify scientific evidences that support the ELS diagnosis, measured by the CTQ, as a determining factor for the use and abuse of alcohol and/or other psychoactive drugs in adolescence and adulthood. **Implications:** Investigate the ELS as a strategy to improve the therapeutic project of patients in nursing care, which will be built based on scientific evidence, so it can be more effective.

## Keywords

Childhood Trauma Questionnaire, Early Life Stress, Evidence-Based Practice, Substance Abuse

---



## 1. Introduction

A leaning towards psychological stress is the result of cognitive distortions and a physiological hyper reactivity before psychosocial demands that may be created due to hypersensitivity of the limbic system, which produces excessive catecholamines, testosterone and cortisol. Some individuals seem to have the tendency to stress, which can be the result of outside forces, and its effects are mediated by the ability to face stress, something learned mainly during childhood [1].

The early and cumulative (chronical) exposure to stress factors may result in neuroendocrine alterations and subjective behavioral changes. These stress factors tend to be involved in long-term process and hinder the development of the brain systems that are responsible for learning, motivation, work stress reductions and adaptive behavior [2].

Individuals that experienced some form of childhood stress may present, in adulthood, consequences that manifest into mental disorders such as: humor, anxiety, personality disorders and the problematic use of alcohol and other substances [3].

ELS experiences lived in childhood may be Physical Abuse, Sexual Abuse, Emotional Abuse, Physical Neglect and Emotional Neglect, according to Bernstein *et al.* (2003) [4].

Physical Abuse is when aggressions are committed by someone older with the risk of lesions, which are erroneously used to educate children by parent or guardians, resulting in body wounds that may lead to death.

Sexual Abuse is any contact or sexual behavior between a child and someone older, seeking to sexually stimulate the child or adolescent and/or using them to obtain sexual stimulation for someone or a third party.

Emotional Abuse is verbal aggressions that affect a child's wellbeing or moral integrity, or any conduct that humiliates, embarrasses or threatens the child. It also occurs when an adult constantly depreciates a child, blocking their efforts in self-acceptance and causing emotional grief.

Physical Neglect is when a parent or a responsible party fails in providing food, adequate clothing or other basic necessities such as: shelter, security and health supervision.

Emotional Neglect is when a guardian fails in providing basic emotional and psychological needs such as love support and motivation, also, when a child emotional necessity is not given, such as affection, cognitive and psychological support [4].

Stress during the early stages of life is a precursor of alcohol abuse and/or other drugs and dependence of such in adulthood. The risk/resilience relation to dependence on psychoactive drugs may be, in part, due to the interaction between genetic variations and environment stress factors, such as experiences with early types of abuse (sexual abuse during childhood, physical and emotional abuse, physical or emotional neglect) [5].

Psychoactive substance dependence may onset in individuals due to the influence of biological, psychological and social factors. Biological factors are associated with each individual's organism, the psychological are associated with personality, fears, anxiety

and insecurity in facing everyday life situations. Social factors are associated with family, culture or, in other words, with the context in which the subject finds himself inserted in. The individual that receives attention, care and limits in an adequate manner are more equipped to grow into well-adjusted adults. Those who face negligence have a tendency to inappropriate behaviors and emotional hardship to solve conflicts [6].

There are many tools that can be used to investigate traumatic events in childhood, although a lot of these have low sensibility and trustability. Many forms of measuring traumas are focused solely on physical or sexual abuse, ignoring other forms of mistreatment, such as the emotional ones. Bernstein *et al.* (1997) created a self-applicable questionnaire with 70 items, called Childhood Trauma Questionnaire (CTQ). It was created using the literature associated with mistreatment and the tools of abuse and neglect during childhood in adults. This instrument investigates five traumatic components: Physical Abuse, Sexual Abuse, Emotional Abuse, Physical Neglect and Emotional Neglect. It also deals with a scale that controls minimizations/denial in the answers provided [7].

It is a tool focused on adolescents (up to twelve years old) and adults, with which are classified the frequency of twenty-eight questions related to situations that happened during childhood and measured by Likert's scale of five points. Factorial, exploratory and confirmatory analysis of the construct (model by structural equation) show that the 25 items of the instrument (excluding 3 items of the minimization/negation scale) compose 5 distinct factors that match the 5 dimensions hypothesized for the instrument. The Childhood Trauma Questionnaire is a standardized self-report inventory that measures the severity of five different types of childhood trauma and tendency to underreport maltreatment. Previous research on the CTQ has demonstrated its validity and reliability among clinical and non-clinical populations [7].

We decide to standardize our sample with this tool because the CTQ is a very commonly used tool, and can be considered the gold standard tool for research in the clinical and forensic fields of ELS [8].

The Integrative Review (IR) is a data collection method which contributes to the phase of the search for Evidence-Based Practice to construct a comprehensive literature analysis contributing to discussions on methods and results of research and experiments, and aims to deepen the understanding of certain phenomenon, based studies and previous evidence [9]. The Evidence-Based Practice comes from the Evidence-Based Medicine (EBM) had origin in the work of the British epidemiologist Archie Cochrane in 1972. It is an approach which defined a problem and carried out the search and evaluation of available evidence on the subject, after the evidence is implemented in practice, and the results evaluated. This approach incorporates the evidence from research, along with the expertise of professional and customer preferences, enabling improved quality of care [11] [12].

## 2. Purpose and Research Question

The purpose of this integrative review was to Identify, Analyze and Synthesize scientific

evidence that support the hypothesis that Early Life Stress (ELS), measured by the CTQ, may in fact result in the use and abuse of psychoactive substances in adolescence and adulthood.

We chose PICOT methodology to formulate the research question PICOT represents the acronym: P = Patient or Population; I = Intervention or Indicator; C = Comparison or Control; O = Outcomes; and T = Time [10].

In this review, the PICOT strategy was used in the following manner:

P—People that suffered Early Life Stress in childhood and used and abused of psychoactive drugs in adolescence and adulthood;

I—Having suffered Early Life Stress, measured by the CTQ;

C—(does not apply);

O—People that suffered Early Life Stress, measured by the CTQ, and eventually used and abused psychoactive substances in adolescence and adulthood;

T—(does not apply).

And the research question was: Suffering ELS during childhood, measured by CTQ, is a determining factor in the use and abuse of psychoactive substances in adolescence and adulthood?

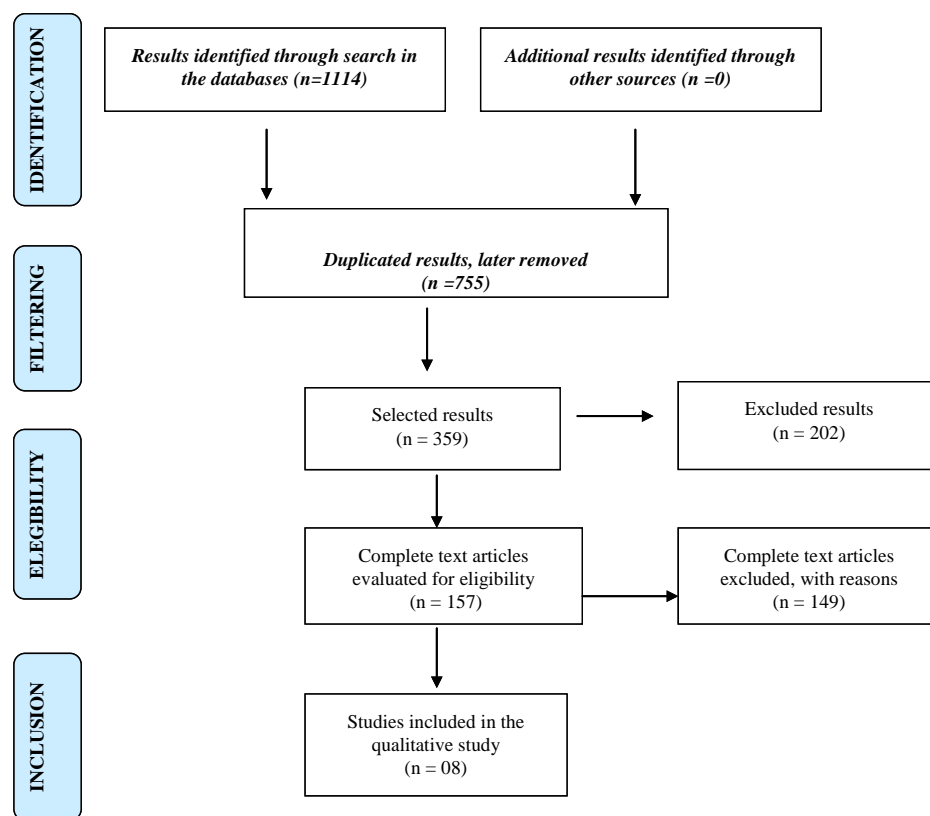
### 3. Method

#### 3.1. Sample Selection

The sample inclusion criteria for this review were: primary research, search limited to the period between 2003 and 08/18/2014; languages (Portuguese, English and Spanish); quantitative and qualitative studies; Primary studies which include the use of psychoactive drugs in adolescence and adulthood as a result of ELS, measured by CTQ. Exclusion criteria: Review Articles; Secondary Articles; Guidelines; Editorials and Articles that researched ELS as the cause of other psychiatric clinical states that are not related to psychoactive substances.

The studies were selected from the following databases: PubMed, Web of Science, Latino-American and Caribbean Literature in Health Care Sciences (LILACS) and Psycinfo. **PubMed:** 298 references were found. After the appropriate filters, 244 remained. **Web of Science:** 96 references were found. After the appropriate filters, 90 remained. **LILACS:** 667 references were found. After the appropriate filters, 63 remained. **Psycinfo:** 53 references were found. After the appropriate filters, 42 remained. The total number of references found in the four databases was of 1114. Using filters regarding language, original articles and publications from 2003 to 2014, the total number of references was 439.

After removing articles that appeared more than once, due to different databases, the number of references left for this study was 359. The titles and abstracts were evaluated according to relevance, and 157 studies were selected for a complete reading. After this integral reading, texts that didn't answer the research question were eliminated, resulting in eight articles left for this review. A flow diagram of study selection process was developed to illustrate the articles selection process (**Figure 1**).



**Figure 1.** Identification process flowchart and article selection according to PRISMA *Statement*, Moher *et al.*, (2009) [14].

### 3.2. Analysis and Synthesis

The articles that were selected to compose this integrative review are described at **Table 1**. A descriptive summary of the results from the integrative review was generated. This summary table were prepared for each primary study included in the review, including the following data: Authors, Year, Country of Origin, Level of Evidence, Study Design, Population, Items not contemplated in accordance with the STROBE tool and Main Results and Conclusions regarding ELS and Psychoactive Substances.

The date analysis of integrative review is descriptive. Our analysis will be presented in thematic categories: ELS and the Use of Alcohol; ELS and the Use of Psychoactive Substances during Adolescence; ELS and the Female Sex; ELS and Coping Strategies. This categories were identified after reading the studies.

This research was conducted according to the literature recommendations of Whittemore & Knafl (2005) to conduct an Integrative Review (IR). The IR of the literature is a method of data collection that contributes to the phase of PBE [9] [12].

The eight articles selected were submitted to analysis to verify methods, and then relevant study information (appearance and content validation) was extracted with validated method by Ursi (2005), which contemplated the identification and methodological characteristics of the studies. The methodological course and the research design were analyzed with the aid of statistic.

**Table 1.** Authors, Year, Country of Origin, Level of Evidence, Study Design, Population, Items not contemplated in accordance with the STROBE tool and Main Results and Conclusions regarding ELS and Psychoactive Substances.

**(E1) Authors:** Sarah F. Eames, Alina Suris, Uma Rao, Hong Xiao, Michael S. Businelle, Robrina Walker, Carol S. North and Bryon Adinoff.

**Year:** 2014

**Title:** Stress Moderates the Effect of Childhood Trauma and Adversity on Recent Drinking in Treatment-Seeking Alcohol-Dependent Men.

**Country of Origin:** EUA

**Keywords:** Stress, Alcoholism, Childhood Trauma, Men, Trauma

**Source:** Journal of Consulting and Clinical Psychology

Level of Evidence: 2

**Objective:** This study sought to clarify the relationship between trauma/adversity in childhood with later alcohol consumption, and the moderating effects of psychosocial stress in adults.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with no control group. Samples by convenience. Statistical analysis was performed using SPSS software and regression analysis. Significance level and type of tests are not specified in the analytical plan.

**Population:** Sample with 77 men recently in abstinence from alcohol who attend residential treatment programs.

**STROBE:** Does not contemplate: 1) Title and abstract: Provide in the abstract an informative and balanced summary of what was done and what was found; 9) Bias: Describe any efforts to address potential sources of bias; 17) Other analyses: Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses; 22) Funding: Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based.

**Main Results and Conclusions:** Childhood traumas predict the severity of drinking in alcohol dependent men, and this effect is stronger in participants with ongoing stress in adulthood. These findings suggest that trauma/adversity in childhood may sensitize the stress response systems [27].

**(E2) Authors:** Scott M. Hyman, Miguel Garcia and Rajita Sinha

**Year:** 2006

**Title:** Gender Specific Associations Between Types of Childhood Maltreatment and the Onset, Escalation and Severity of Substance Use in Cocaine Dependent Adults.

**Country of Origin:** EUA

**Keywords:** Childhood maltreatment; Gender Differences; substance Use

**Source:** Am J Drug Alcohol Abuse

Level of Evidence: 2

**Objective:** To examine the associations between the types of child maltreatment and its inception, climbing and severity of substance use in cocaine-dependent adults.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with no control group. Samples by convenience. Software used for statistical analysis and significance level not informed the data analysis plan. Held simple regression analysis. Tests: Chi-square, T-test and Wilcoxon Rank-Sum.

**Population:** Sample with 87 participants, men (n = 55) and women (n = 32) in treatment for cocaine addiction.

**STROBE:** Does not contemplate: 5) Setting: Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection; 6) Participants: Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants; 9) Bias: Describe any efforts to address potential sources of bias; 14) Descriptive data: (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders; 19) Limitations: Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias.

**Main Results and Conclusions:** In men, emotional abuse was associated with a younger age for the first use of alcohol and a bigger severity of substance abuse. In women, the sexual abuse, emotional abuse and mistreatment in general were associated with the first use of alcohol, emotional abuse, neglect and mistreatment were associated with a bigger severity of substance abuse. The results suggest that early intervention for childhood victims especially girls, may delay or prevent the early onset of alcohol use and reduce the risk of a more severe course of addiction [17].

## Continued

**(E3) Authors:** Sunny Hyucksun Shin, Hyokyoun Grace Hong and Andrea L. Hazen

**Year:** 2010

**Title:** Childhood Sexual Abuse and Adolescent Substance Use: a latent class analysis.

**Country of Origin:** EUA

**Keywords:** Sexual abuse, Substance use, Adolescents, Childhood maltreatment, Latent class analysis, Physical abuse, Drug use, Child neglect

**Source:** Drug and Alcohol Dependence

**Level of Evidence:** 2

**Objective:** To characterize changes in substance use patterns in adolescents and to examine the association between childhood sexual abuse and qualitatively distinct patterns of substance use in adolescents.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with no control group. Samples by convenience. Used SAS software for statistical analysis. Held multinomial logistic regression analysis, significance level of 5%. Made Bayesian Information Criterion Test (BIC) and likelihood ratio test (LMR).

**Population:** Sample with 1,019 adolescents between the 13 and 18 years old (age average: 15.9 years) selected from five public funding systems.

**Main Results and Conclusions:** Child Sexual Abuse was associated to a higher risk for girls to develop Strong abuse of substances. The results indicate that women victims of childhood sexual abuse who are involved in public service systems, are at high risk of developing the use of multiple substances in adolescence.

**STROBE:** Does not contemplate items 9) Bias: Describe any efforts to address potential sources of bias; 11) Quantitative variables: Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why; 13) Participants: 1) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed, 2) Give reasons for non-participation at each stage; 14) Descriptive data: 1) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders, 2) Indicate number of participants with missing data for each variable of interest [18].

**(E4) Authors:** Adriana M. Tucci, Florence Kerr-Corrêa and Maria Lucia O. Souza-Formigoni

**Year:** 2010

**Title:** Childhood Trauma in Substance Use Disorder and Depression: an analysis by gender among a Brazilian clinical sample.

**Country of Origin:** Brazil

**Keywords:** Substance Use Disorder, Depression, Childhood Trauma, Gender, Emotional Abuse, Physical Abuse, Psychological abuse

**Source:** Child Abuse & Neglect

**Level of Evidence:** 2

**Objective:** This study compared the frequency and intensity of childhood trauma in patients dependent on alcohol or other drugs in patients with depression, and a group control without psychiatric diagnoses.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with the presence of a control group. Samples by convenience. Statistical software was used Statistica. Held Analysis Logistic regression. Tests: Chi-square, ANOVA and Newman-Keuls. Level of significance 5%.

**Population:** Sample with 295 participants of both sexes. Divided into 03 groups (alcohol or other drugs dependent, patients with depression and control group with no psychiatric diagnosis).

**Main Results and Conclusions:** A higher frequency and intensity of emotional, physical and sexual abuse was found in patients dependent on alcohol or other drugs when compared to the group of depressed patients, which in turn show a bigger proportion than the control group. In all groups, higher frequency was found in the female sex. Because of the high frequency and intensity of childhood trauma among patients dependent on alcohol or other drugs and depressed patients, evaluation of problems due to childhood trauma among these patients is essential for a better understanding of the etiology of such diseases and their treatment.

**STROBE:** Does not contemplate items: 6) Participants: Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants; 7) Variables: Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable; 19) Limitations: Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias; 22) Funding: Give the source of

## Continued

funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based [21].

**(E5) Authors:** Jessica R. Peltan and Tony Cellucci

**Year:** 2011

**Title:** Childhood Sexual Abuse and Substance Abuse Treatment Utilization among Substance-Dependent Incarcerated Women.

**Country of Origin:** EUA

**Keywords:** Treatment utilization; Childhood sexual abuse; Incarcerated women

**Source:** Journal of Substance Abuse Treatment

**Level of Evidence:** 2

**Objective:** Incarcerated women have high rates of substance abuse problems and trauma. A large number of variables can influence these women are seeking help for the treatment of problems of substance abuse.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with no control group. Samples by convenience. Significance level not informed in the method. Performed regression analysis. Testing:

T-test and correlation test.

**Population:** Sample with 40 participants, all of them in prison.

**Main Results and Conclusions:** The gravity of sexual abuse during childhood and current symptoms of trauma were negatively related to episodes of treatment for substance abuse. These women can use psychoactive substances as a means of coping childhood trauma or may not see substance abuse as responsive to co-occurrence symptoms of trauma.

**STROBE:** Does not contemplate items 1) Title and abstract: (b) Provide in the abstract an informative and balanced summary of what was done and what was found; 2) Background/rationale: Explain the scientific background and rationale for the investigation being reported; 4) Study design: Present key elements of study design early in the paper; 7) Variables: Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable; 12) Statistical methods: Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy [19].

**(E6) Authors:** Meeyoung Min, Kathleen Farkas, Sonia Minnes and Lynn T. Singer

**Year:** 2007

**Title:** Impact of Childhood Abuse and Neglect on Substance Abuse and Psychological Distress in Adulthood.

**Country of Origin:** EUA

**Keywords:** No Contains

**Source:** Journal of Traumatic Stress

**Level of Evidence:** 2

**Objective:** To test the hypothesis that people with greater use of avoidant coping strategies are hypothetically susceptible to substance abuse and have serious levels of psychological distress.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with no control group. Samples by convenience. Software used for statistical analysis was SPSS, AMOS module. Held Analysis of Structural Equation. Significance level of 5%. Test: Pearson's correlation test.

**Population:** Sample of 285 women in post-partum in a teaching hospital.

**Main Results and Conclusions:** Childhood trauma were directly and indirectly related to psychological stress and substance abuse. The childhood trauma self-reported was significantly related to higher substance abuse and psychological disorders, through low levels of education and avoidant coping strategies. The results indicate importance of educational strategies to support and interventions to teach coping skills to prevent substance abuse and long-term psychological distress in children exposed to trauma.

**STROBE:** Does not contemplate items: 7) Variables: Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable; 9) Bias: Describe any efforts to address potential sources of bias; 17) Other analyses: Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses; 22) Funding: Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based [20].



## Continued

**(E7) Authors:** Luciana Burim Scomparini, Bernardo dos Santos, Robert Alan Rosenheck and Sandra Scivoletto

**Year:** 2013

**Title:** Association of Child Maltreatment and Psychiatric Diagnosis in Brazilian Children and Adolescents

**Country of Origin:** Brazil

**Palavras-Chave:** Child Abuse; Psychiatric Disorders; Shelter; Community Programs; Follow-up Studies.

**Fonte:** Clinics

**Level of Evidence:** 2

**Objective:** To evaluate the association between different types of abuse and the presence of psychiatric disorders in children and adolescents highly vulnerable, attended by a multidisciplinary program.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with no control group. Samples by convenience. Statistical software used: SPSS. Held Analysis Logistic Regression with significance level of 5%. Tests not informed.

**Population:** Sample of 351 participants, children and adolescents that have lived in shelters.

**Main Results and Conclusions:** The most commons psychiatric diagnosis found in the sample was the Disorder by Substance Use. All patients suffered from negligence and more than half experience physical or sexual abuse. Physical abuse and emotional neglect were most strongly associated with mental retardation and the presence of multiple traumas related to substance abuse.

**STROBE:** Does not contemplate items: 3) Objectives: State specific objectives, including any prespecified hypotheses; 4) Study design: Present key elements of study design early in the paper; 6) Participants: Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants; 7) Variables: Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable; 11) Quantitative variables: Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why; 14) Descriptive data: (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders, (b) Indicate number of participants with missing data for each variable of interest; 17) Other analyses: Report other analyses done—e.g. analyses of subgroups and interactions, and sensitivity analyses [22].

**(E8) Authors:** Marc Vogel, Kenneth M. Dürsteler-MacFarland, Marc Walter, Johannes Strasser, Stephanie Fehr, Luis Prieto and Gerhard A. Wiesbeck

**Year:** 2011

**Title:** Prolonged use of Benzodiazepines is Associated with Childhood Trauma in Opioid-Maintained Patients.

**Country of Origin:** Switzerland

**Keywords:** Sedative, Diazepam, Adverse childhood events, Opioid dependence

**Source:** Drug and Alcohol Dependence

**Level of Evidence:** 2

**Objective:** Abusive use of Benzodiazepines (BZD) in Opioid users in treatment is very common and has been linked to poor and unsuccessful treatments. This study aims to examine the possibility of traumatic experiences in childhood in patients treated with oral or injectable diacetylmorphine opioids.

**Study Design:** Quantitative cross-sectional study with observation, not experimentation, with no control group. Samples by convenience. Statistical software used: SPSS and STATA. Performed logistic regression analysis.

Significance level of 5%. Tests: Cohen's kappa, chi-square, Fisher, Mann-Whitney and Kendall tau-b.

**Population:** Sample with 193 participants, BZD users in treatment due to the use of opioids.

**Main Results and Conclusions:** The use of BZD was predominant and the load of childhood traumatic experiences was high, with 67% reporting having suffered at least one type of trauma in a moderate or severe way. Traumatic experiences in childhood may be associated with prolonged use of BZD and may represent an important starting point for prevention.

**STROBE:** Does not contemplate items 3) Objectives: State specific objectives, including any prespecified hypotheses; 9) Bias: Describe any efforts to address potential sources of bias; 14) Descriptive data: 1) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders; 2) Indicate number of participants with missing data for each variable of interest [25].

The level of strength of evidence of the studies was analyzed according to the PBE criteria, using the Evidence Classification [10]. All the studies included have level-2 evidence strength (evidence derived from a single study of cut or case-control study) according to the Evidence Classification to studies of clinical nature of Prognosis/Prediction or Etiology.

With the purpose of discussing the quality of each study selected, the STROBE Statement was used. It is a checklist composed of 22 items with recommendations, with the purpose of guiding authors regarding content to be contemplated in observational studies, seeking a more complete description to improve the quality of the scientific article [13].

## 4. Discussion

### 4.1. ELS and the Use of Alcohol

The psychoactive drug more often used by those participating in these selected studies for this review was alcohol. Individuals tend to start with alcohol and nicotine (legal substances) before starting with illegal substances. According with the IV National Survey regarding Psychotropic Drugs among Students of Public and Private Middle School and High School in the 27 Brazilian Capitals in 2010, alcohol and tobacco are the prevalent drugs used in life, in all capitals, followed by inhalant drugs [15].

Cigarettes and alcoholic beverages, mainly beer and wine, were indicated as having been used much earlier in life than illicit drugs. On average, marijuana tends to come 2, 5 years after the use of cigarettes or alcoholic beverages, and cocaine and crack were used a little after a year from marijuana [16].

The age of the first use of alcohol is considered as a predictor for the age of cocaine first use in both genders. It may have indirect correlation to mistreatment during childhood and the leaning towards using cocaine, which is predicted using the first use of alcohol. Childhood mistreatment may contribute directly to the age of first use of alcohol. The use of alcohol and nicotine opens the door to other drugs [17].

In the study by Shin *et al.* (2010) [18], which classified adolescent substance users in latent classes, the use of alcohol and cannabis was present in all classes of substance users, and all the classes which made use of cannabis, also reported having used alcohol as well. All classes that used heavy drugs reported also having used alcohol and cannabis.

In the Peltan & Cellucci (2011) study, 55% of the sample reported the use of alcohol while consuming other drugs. In the Min *et al.* (2007) study, 88% of the sample of pre-natal mothers made use of at least one substance during pregnancy, while over half (66%) made use of alcohol. Alcohol had a significant connection with 4 of the 5 types of trauma, not being linked, however, with Emotional Abuse, in the study performed by Tucci *et al.* (2010) [19] [20] [21].

### 4.2. ELS and the Use of Psychoactive Substances during Adolescence

Mistreatment and cumulative stressful events before puberty and especially in the first years of life is linked to the early drinking abuse in adolescence and alcohol and other

drugs dependence at the beginning of adulthood [5].

In Scomparini *et al.* (2013), a study performed with children and adolescents with an average of 12.47 years, the Substance Use Disorder was positively associated with the exposure to multiple traumas and with each new trauma, the likelihood of the disorder increased by 34% [22].

Shin *et al.* (2010), defend that adolescents involved in public service in the city (regardless of sex), when older, are more likely to use multiple substances when compared to younger adolescents (ages between 13 - 15 years). The bigger risk factor is the influence of use by pairs and the protection factor is the parental control [18].

In the study by White *et al.* (2013), adolescents that made use of multiple substances were directly associated with psychological stress and use by pairs. Older adolescents tended to have higher access and availability throughout life to a myriad of drugs when compared to younger adolescents [23].

While mistreatment during childhood may contribute directly to the age of first alcohol use, other factors in the early use of alcohol in the adolescent's life (for example, the use of substances by pairs) may contribute to a faster progression of cocaine use [17].

### 4.3. ELS and the Female Sex

Authors who have performed research with both gender, indicate that childhood traumas and later use of psychoactive substances are more present in female [17] [18] [21].

The ELS may affect directly upon the vulnerability of women regarding the use of alcohol, especially in association with stress factors beyond their control. Extremely stressful life events were associated with the consumption of alcohol only among women and these effects were negative on men, when exposed to mistreatment during childhood [24].

Scomparini *et al.* (2013), observed a higher average of adverse events among women, when compared to men, and Vogel *et al.* (2011), observed that women were more likely to obtain higher scores in the CTQ, higher subscores of moderate or serious Emotional Abuse, Physical Abuse and Sexual Abuse [23] [24].

In Hyman *et al.* (2006), Sexual Abuse, Emotional Abuse and Mistreatment in General were strongly linked with the age at which women dependent on cocaine started first using alcohol, and the age of the first use of alcohol was directly associated with the age cocaine would first be used and used regularly throughout life. Emotional Abuse, Emotional Neglect and Mistreatment in General were positively associated with the use of substance throughout life, and Sexual Abuse was strongly associated with the use of alcohol for the first time by women [17].

According to Shin *et al.* (2010), women who suffered sexual abuse are more likely to use multiple substances in adolescence (this association was negative in male) [18].

In the study performed by Tucci *et al.* (2010), the frequency and intensity of Emotional Abuse, Physical Abuse and Sexual Abuse in patients who have alcohol and/or other drugs dependency was higher in women than in men [21].

Heffner *et al.* (2011), conducted a study with both gender regarding the gravity of the childhood traumas and how it could be associated with relapses in the use of alcohol and/or other psychoactive substances with women but not with men [26].

Another study performed by Hyman *et al.* (2008), also had results showing that childhood trauma increased the chance of relapse in the use of psychoactive substances only with women [2].

#### 4.4. ELS and Coping Strategies

A study with incarcerated women showed a negative association between Sexual Abuse and other traumas regarding the treatment for psychoactive substances abuse. This abusive substance use may have been used as a coping mechanism (non-assertive coping), or these women failed to notice the connection between the substance abuse and the trauma lived [19].

Childhood trauma were significantly associated with low levels of education and use of non-assertive coping mechanisms (avoidance). The reason for this low level of education may be due to Neglect and Emotional Abuse of children that have not received the proper parental support to attend school regularly and thus learned to use avoidance tactics, such as skipping class and using alcohol and other drugs to deal with the impact of the abuse and/or neglect [20].

For Eames, *et al.* (2014), the association between ELS and the later use of alcohol may be due to traumas, which conditioned the way the child learned to deal with stress and can predict the gravity of alcohol dependence. This effect was stronger on men that have lived with stress continuously throughout their adult lives. Due to stress factors during rehabilitation, individuals in treatment who experienced high levels of childhood trauma are more likely to relapse [27].

Mistreatment during childhood may potentialize the genetic vulnerability to alcohol use as a stress coping mechanism, and the impact of these effects may be measured by the interaction between gene and environment. Risk factors such as childhood mistreatment likely increase the change these individuals have of developing non-assertive coping mechanisms [5] [24].

#### 4.5. Nursing Contribution on ELS

Considering the nursing mental health care developed during the vital cycle, nurses represent professionals that are remaining most time with patients. These professionals provide assistance to children and adolescents, and have the better opportunities to observe and identify the signs and symptoms of abuse and neglect in childhood, which means ELS. Nursing professionals should act preventively about ELS in nursing care plan. In this way, nurses have to provide to their clients possibilities to develop assertive coping strategies and even actuate legal support for removal of stress factors when it would be necessary.

Among adults who suffered ELS and developed problematic use of psychoactive substances, the ELS should be identified, and stress reduction interventions must be guar-

anteed, considering a cumulative history of adversities throughout life.

## 5. Study Limitations

The studies included in this review corroborate the research question, showing that the use and abuse of psychoactive substances in adolescence and adulthood is an outcome of the childhood trauma, though each one should be carefully assessed.

All studies included in our sample are cross-sectional studies, so there may be casual interference, and it is known that other factors may also influence drug use (genetics, family, social factors etc.) (Hyman *et al.* 2006; Maltreatments experienced in childhood are self-reported, so there may be memory leaks or omission of facts. The samples of studies was gathered by convenience (they were already users of alcohol and/or other psychoactive substances, or were considered a population at risk/vulnerable) [17] [28].

In our sample, only one study was conducted in Brazil by Tucci *et al.* (2010) with a control group (psychoactive substances non-dependent group without psychiatric diagnosis), confirming the hypothesis that childhood trauma was prevalent in the group that made use of psychoactive substances [21].

The studies used different types of data collection for evaluating the use of psychoactive substances and to measure other psychiatric disorders, but all the authors selected for this review used only the CTQ as a tool to assess ELS.

The research associated with Childhood Trauma is an interdisciplinary field, since the children's wellbeing is a concern not only for health care courses, but to the education, social services, legal fields, as well as for the public in general. Despite being a multi/interdisciplinary field, there was not found studies performed by nurses to answer the research question, even if the search was performed in multidisciplinary databases [29].

## 6. Conclusions and Implications

Through this integrative literature review, scientific evidence supporting ELS as one of the factors of alcohol abuse and/or other psychoactive substances in adolescence and adulthood were identified in all articles included in this study. Studies show that the occurrence of mistreatment in combination with environmental and genetic factors influence the onset of substance use, the emergence and maintenance of addiction and also the relapse processes.

As a drug, alcohol was the most frequent substance in this research. In addition to alcohol and other illicit drugs, traumatic childhood experiences may also be associated with prolonged use of BZD in patients undergoing treatment for opioid use and this may be an important starting point for the prevention of substances abuse [25].

ELS may turn adolescents living in populations at risk more vulnerable to alcohol and other psychoactive substances. The improvement of substance use prevention and the creation of treatment services for adolescents, victims of Child Sexual Abuse is imperative. It is important that appropriate public policies be developed for the prevention of child abuse, especially to reduce the risk of subsequent mental disabilities [18]

[22].

In studies using samples with both genders, there is the confirmation that the abuse of psychoactive substances after ELS, was more frequent in women. The early interventions for abused children, especially females, can help delay or prevent the early onset of alcohol use and reduce the risk of a more severe dependence [17].

Min *et al.* (2007) suggests the importance of understanding trauma in women seeking treatment for psychological disorders and substance abuse, so that interventions may be created to promote assertive coping skills, to reduce or prevent the problems associated with childhood trauma [20].

Incarcerated women who suffered ELS have shown low levels of demand for treatment for the abuse of psychoactive substances. One should consider and seek to understand the barriers faced by this population, so that better interventions can be provided to encourage them to seek help [19].

It was also possible to identify the use of psychoactive substances as a non-assertive coping strategy for traumas experienced in childhood, and in addition to the use of psychoactive substances, ELS is strongly linked with the development of psychological stress disorders. It is important to include traumas in childhood in the diagnostic process of people making treatment for substance abuse, so these coping strategies can be worked, reducing the number of relapses [21]. Eames *et al.* (2014), suggests a strong need to work on these coping skills, stress management background and pharmacological treatment at the beginning of the recovery process for substances users [27].

The author used CTQ only as a tool to measure ELS and confirmed it as being highly useful to identify childhood traumas.

This study reinforces the need to investigate the ELS occurrence in people that abuse of psychoactive substances, as strategy to improve treatment, making it more effective for these specific patients. Assertive coping skills must be developed, as well as stress management. It is important to note that early interventions with mistreated children (especially females) helps to slow down or even prevent substance abuse later on and a more serious evolution of psychoactive substances dependence.

## References

- [1] Lipp, M.E.N. (2001) Estresse Emocional: A Contribuição de Estressores Internos e Externos. *Archives of Clinical Psychiatry*, **28**, 347-349.
- [2] Hyman, S.M., Paliwal, P., Chaplin, T.M., Mazure, C.M., Rounsaville, B.J. and Sinha, R. (2008) Severity of Childhood Trauma Is Predictive of Cocaine Relapse Outcomes in Women but Not Men. *Drug and Alcohol Dependence*, **92**, 208-216.  
<http://dx.doi.org/10.1016/j.drugalcdep.2007.08.006>
- [3] Afifi, T.O., Mota, N.P., Dasiewicz, P., MacMillan, H.L. and Sareen, J. (2012) Physical Punishment and Mental Disorders: Results from a Nationally Representative US Sample. *Pediatrics*, **130**, 1-9. <http://dx.doi.org/10.1542/peds.2011-2947>
- [4] Bernstein, D.P., Stein, J.A., Newcomb, M.D., Walker, E., Pogge, D., Ahluvalia, T., *et al.* (2003) Development and Validation of a Brief Screening Version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, **27**, 169-190.  
[http://dx.doi.org/10.1016/S0145-2134\(02\)00541-0](http://dx.doi.org/10.1016/S0145-2134(02)00541-0)

- [5] Enoch, M.A. (2012) The Influence of Gene-Environment Interactions on the Development of Alcoholism and Drug Dependence. *Current Psychiatry Reports*, **14**, 150-158. <http://dx.doi.org/10.1007/s11920-011-0252-9>
- [6] Blefari, A.L. (2002) A família e a drogadição. Monografia de Especialização, Faculdade de Medicina, Universidade de São Paulo, São Paulo.
- [7] Bernstein, D.P., Ahluvalia, T., Pogge, D. and Handelsman, L. (1997) Validity of the Childhood Trauma Questionnaire in an Adolescent Psychiatric Population. *Journal of the American Academy of Child and Adolescent Psychiatry*, **36**, 340-348. <http://dx.doi.org/10.1097/00004583-199703000-00012>
- [8] Grassi-Oliveira, R., Stein, L.M. and Pezzi, J.C. (2006) Tradução e validação de conteúdo da versão em português do Childhood Trauma Questionnaire. *Revista de Saúde Pública*, **40**, 249-255. <http://dx.doi.org/10.1590/S0034-89102006000200010>
- [9] Beyea, S.C. and Nicoll, L.H. (1998) Writing an Integrative Review. *AORN Journal*, **67**, 877-880. [http://dx.doi.org/10.1016/S0001-2092\(06\)62653-7](http://dx.doi.org/10.1016/S0001-2092(06)62653-7)
- [10] Melnyk, B.M. and Fineout-Overholt, E. (2011) Making the Case for Evidence-Based Practice. In: Melnyk, B.M. and Fineout-Overholt, E., Eds., *Evidence-Based Practice in Nursing & Healthcare. A Guide to Best Practice*. 2nd Edition, Lippincot Williams & Wilkins, Philadelphia, 3-24.
- [11] Mendes, K.S., Silveira, R.C.C.P. and Galvão, C.M. (2008) Revisão integrativa: Método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto & Contexto - Enfermagem*, **17**, 758-764. <http://dx.doi.org/10.1590/S0104-07072008000400018>
- [12] Whittemore, R. and Knafl, K. (2005) The Integrative Review: Updated Methodology. *Journal of Advanced Nursing*, **52**, 546-553. <http://dx.doi.org/10.1111/j.1365-2648.2005.03621.x>
- [13] Elm, V.E., Altman, D.G., Egger, M., Pocock, S.J., Gøtzsche, P.C. and Vandenbroucke, J.P., STROBE Initiative (2008) The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement: Guidelines for Reporting Observational Studies. *Journal of Clinical Epidemiology*, **61**, 344-349. <http://dx.doi.org/10.1016/j.jclinepi.2007.11.008>
- [14] Moher, D., Liberati, A., Tetzlaff, J. and Altman, D.G., The PRISMA Group (2009) Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, **6**, e1000097. <http://dx.doi.org/10.1371/journal.pmed.1000097>
- [15] Carlini, E.L.A., Noto, A.R., Sanchez, Z.M., Carlini, C.M.A., Locatelli, D.P., Abeid, L.R., *et al.* (2010) IV Levantamento nacional sobre o consumo de drogas psicotrópicas entre estudantes do ensino fundamental e médio das redes pública e privada de ensino nas 27 capitais brasileiras. Centro Brasileiro de Informações sobre Drogas Psicotrópicas; Universidade Federal de São Paulo; Brasília: Secretaria Nacional de Políticas sobre Drogas, São Paulo.
- [16] Kandel, D. and Yamaguchi, K. (1993) From Beer to Crack: Developmental Patterns of Drug Involvement. *American Journal of Public Health*, **83**, 851-855. <http://dx.doi.org/10.2105/AJPH.83.6.851>
- [17] Hyman, S.M., Garcia, M. and Sinha, R. (2006) Gender Specific Associations between Types of Childhood Maltreatment and the Onset, Escalation and Severity of Substance Use in Cocaine Dependent Adults. *American Journal of Drug and Alcohol Abuse*, **32**, 655-664. <http://dx.doi.org/10.1080/10623320600919193>
- [18] Shin, S.H., Hong, H.G. and Hazen, A.L. (2010) Childhood Sexual Abuse and Adolescent Substance Use: A Latent Class Analysis. *Drug and Alcohol Dependence*, **109**, 226-235. <http://dx.doi.org/10.1016/j.drugalcdep.2010.01.013>
- [19] Peltan, J.R. and Cellucci, T. (2011) Childhood Sexual Abuse and Substance Abuse Treatment Utilization among Substance-Dependent Incarcerated Women. *US. Journal of Sub-*



- stance Abuse Treatment*, **41**, 215-224. <http://dx.doi.org/10.1016/j.jsat.2011.03.004>
- [20] Min, M., Farkas, K., Minnes, S. and Singer, L.T. (2007) Impact of Childhood Abuse and Neglect on Substance Abuse and Psychological Distress in Adulthood. *Journal of Traumatic Stress*, **20**, 833-844. <http://dx.doi.org/10.1002/jts.20250>
- [21] Tucci, A.M., Kerr-Corrêa, F. and Souza-Formigoni, M.L. (2010) Childhood Trauma in Substance Use Disorder and Depression: An Analysis by Gender among a Brazilian Clinical Sample. *Child Abuse & Neglect*, **34**, 95-104. <http://dx.doi.org/10.1016/j.chiabu.2009.07.001>
- [22] Scomparini, L.B., Santos, B., Rosenheck, R.A. and Scivoletto, S. (2013) Association of Child Maltreatment and Psychiatric Diagnosis in Brazilian Children and Adolescents. *Clinics*, **68**, 1096-1102. [http://dx.doi.org/10.6061/clinics/2013\(08\)06](http://dx.doi.org/10.6061/clinics/2013(08)06)
- [23] White, A., Chan, G.C.K., Quek, L.-H., Connor, J.P., Saunders, J.B., Baker, P., *et al.* (2013) The Topography of Multiple Drug Use among Adolescent Australians: Findings from the National Drug Strategy Household Survey. *Addictive Behaviors*, **38**, 2068-2073. <http://dx.doi.org/10.1016/j.addbeh.2013.01.001>
- [24] Young-Wolff, E.C., Kendler, K.S. and Prescott, C.A. (2012) Interactive Effects of Childhood Maltreatment and Recent Stressful Life Events on Alcohol Consumption in Adulthood. *Journal of Studies on Alcohol and Drugs*, **73**, 559-569. <http://dx.doi.org/10.15288/jsad.2012.73.559>
- [25] Vogel, M., Dürsteler-Macfarland, K.M., Walter, M., Strasser, J., Fehr, S., Prieto, L., *et al.* (2011) Prolonged Use of Benzodiazepines Is Associated with Childhood Trauma in Opioid-Maintained Patients. *Drug and Alcohol Dependence*, **119**, 93-98. <http://dx.doi.org/10.1016/j.drugalcdep.2011.05.037>
- [26] Heffner, J.L., Blom, T.J. and Anthenelli, R.M. (2011) Gender Differences in Trauma History and Symptoms as Predictors of Relapse to Alcohol and Drug Use. *American Journal on Addictions*, **20**, 307-311. <http://dx.doi.org/10.1111/j.1521-0391.2011.00141.x>
- [27] Eames, S.F., Suris, A., Rao, U., Xiao, H., Businelle, M.S., Walker, R., *et al.* (2014) Stress Moderates the Effect of Childhood Trauma and Adversity on Recent Drinking in Treatment-Seeking Alcohol-Dependent Men. *Journal of Consulting and Clinical Psychology*, **82**, 441-447. <http://dx.doi.org/10.1037/a0036291>
- [28] Fenton, M.C., Geier, T., Keyes, K., Skodol, A.E., Grant, B.F. and Hasin, D.S. (2013) Combined Role of Childhood Maltreatment, Family History, and Gender in the Risk for Alcohol Dependence. *Psychological Medicine*, **43**, 1045-1057. <http://dx.doi.org/10.1017/S0033291712001729>
- [29] Mulvihill, D. (2005) The Health Impact of Childhood Trauma: An Interdisciplinary Review, 1997-2003. *Issues in Comprehensive Pediatric Nursing*, **28**, 115-136. <http://dx.doi.org/10.1080/01460860590950890>

# Development of Subacute and Complex Care Programs at the Community Level

Ronald Lagoe<sup>1\*</sup>, Cheryl Noetscher<sup>2</sup>, Shelly Littau<sup>1</sup>

<sup>1</sup>Hospital Executive Council, Syracuse, USA

<sup>2</sup>St. Joseph's Hospital Health Center, Syracuse, USA

Email: \*Hospexcl@cnymail.com

**How to cite this paper:** Lagoe, R., Noetscher, C. and Littau, S. (2016) Development of Subacute and Complex Care Programs at the Community Level. *Open Journal of Nursing*, 6, 937-947.

<http://dx.doi.org/10.4236/ojn.2016.611090>

**Received:** October 11, 2016

**Accepted:** November 21, 2016

**Published:** November 24, 2016

Copyright © 2016 by authors and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

Patients requiring Subacute and Complex Care services continue to challenge hospitals attempting to reduce inpatient stays and improve efficiency. In recent years, numbers of high severity of illness patients in hospitals have increased, adding to this challenge. Nurse care managers have a major responsibility for supporting the care of these patients. This study described the development of services for Subacute and Complex Care patients in the hospitals of Syracuse, New York. These hospitals used their own resources to develop programs including high cost medications, intravenous therapy, extensive wound care, and bariatric care in settings where they had not been available. In the absence of third party funding of another level of care, the hospitals provided program development funds for limited time periods in order to initiate these services. The Syracuse hospitals were able to phase out support for these programs after they were operational in the nursing homes for an extended period of time. The study data indicated that implementation of these programs limited the rate of increase of adult medicine stays and reduced adult surgery stays. The severity of illness for both major services increased in the Syracuse hospitals during this time. This process required acute and long term care providers who were interested in making the process work for the benefit of the patient populations involved, as well as for the needs of their own organizations.

## Keywords

Hospital Lengths of Stay, Hospitalization, Long Term Care

## 1. Introduction

Transitions from acute to lower levels of care have always been a challenge. The ability to move patients from acute care to home, assisted living, skilled nursing, or other care

locations has become increasingly important as more patients crowd hospital emergency departments and require acute care admission. This need for movement of patients is essential to the provision of good patient care. It has been supported by both providers and payors of care [1] [2] [3].

In hospitals and health care systems, the role of the nurse care manager has taken on greater importance in moving patients between levels of care. This is a major responsibility to patients and to provider organizations.

Providers such as acute hospitals need efficiency in the delivery of care because extended stays detract from the quality of care and result in large additional expenditures for increased labor, room and board, pharmaceutical, and other costs. Reimbursement for inpatient hospital care from payors is based on discharges and does not include separate additional payments for many of these expenses [4].

The impact of these issues related to hospital lengths of stay has been heightened by risk sharing programs such as Medicare's Merit Incentive Payment System, Accountable Care Organizations and the Blue Cross ACQA Initiative. These efforts focus on efficiency in the delivery of care for hospitals and health care networks. Because of their connection to ambulatory care, many of these efforts relate directly to hospital utilization [5] [6] [7].

The implementation of bundling programs by Medicare has stimulated health care providers to improve care by reducing hospital stays and expediting discharges home. These programs began with orthopedic procedures, but are expanding to medical diagnoses [8]. In most facilities, every episode is being scrutinized to assure that all care is provided in the appropriate setting in a timely, efficient manner. Patients remaining in a hospital longer than necessary risk infections such as pneumonia, loss of mobility, skin breakdown, and other complications. Payors are assessing financial penalties when these adverse outcomes occur in an effort to stimulate providers to improve quality [9] [10] [11] [12].

Transitions from acute care require that lower intensity services are available in the community where the patient may need them. For example, patients requiring several weeks of intravenous antibiotic therapy may not require acute care but may require a skilled nursing facility employing a staff who are qualified to administer and monitor the antibiotic.

The reduction of extended hospital stays has been addressed by the development of Long Term Acute Care Programs in some states. In states where these programs have not been implemented, hospitals have developed their own initiatives to address extended stays [13] [14].

## 2. Population

This study describes the efforts of the hospitals in the metropolitan area of Syracuse, New York, to support transitions from acute care. These hospitals comprise the acute care system of the area. At the time of initiation, these less intense services were not available in nursing homes resulting in disruption of patient flow, backups in emer-

gency departments, and staff frustrations.

The acute care facilities involved in these efforts included Crouse Hospital (19,919 inpatient discharges, January-December 2015), St. Joseph's Hospital Health Center (25,532 discharges, January-December 2015), and Upstate University Hospital (26,649 discharges, January-December 2015). Each of these hospitals is a large urban acute care facility that provides primary, secondary, and tertiary services. These hospitals provide acute care to a service area of 600,000 and referral center services to the eleven county Central New York Health Service Area with a population of 1,400,000.

Historically, the Syracuse hospitals have worked cooperatively to improve the efficiency of care in the local acute care system. Prior to the development of the Subacute and Complex Care Programs, cooperative programs including length of stay reduction, clinical pathways and protocols had been initiated with the nursing care management departments in conjunction with the Hospital Executive Council [15].

Additional impetus for the Subacute and Complex Care Programs occurred because the hospitals owned only 14 percent of the long term care beds in the community and New York State does not have a program that provides additional financial support for long term acute care patients [16].

### 3. Method

Beginning in 2004, the Syracuse hospitals developed a number of Subacute Programs to support the movement of patients from hospitals to nursing homes. Each of these programs focused on the development of a single service. In 2004, none of the nursing homes in the Syracuse metropolitan area provided these services.

Prior to the start of each initial program, teams of nursing staff from the hospitals worked with each participating nursing home to develop policies and procedures. Education of the nursing home staffs also occurred, assuring safe transitions for patients and alleviating concerns of hospital physicians and staff.

Individual Subacute Programs included the following.

- Intravenous Medications (2004)—including single, low cost medications such as Ceftriaxone and Vancomycin.
- High Cost Oral Medications (2005) such as Abilify and Aranesp.
- Enhanced Medications (2007)—including higher cost oral and intravenous medications such as Procrit, Penicillin G (IV), and some Chemotherapy.
- Extensive Wound Care (2005)—including use of vacuum assisted closure device equipment and special dressings.
- Bariatric (2007)—including patients with high Body Mass Indices requiring bariatric beds, lifts, wheelchairs and dedicated staff.
- Offsite Transport (2007)—including stretcher and wheelchair transportation for dialysis and other services.

In addition, the following programs were initiated in 2014 and 2015 to meet the needs of patients who required Complex Care Services.

- Multiple Intravenous Antibiotics.

- Combinations of Medications such as antibiotics and Lovenox.
- Extensive Wound Care including vacuum assisted equipment and intravenous medications.
- Behavioral Issues Requiring One on One Care.

The Subacute and Complex Care Programs were implemented through agreements including the Syracuse hospitals, participating nursing homes, and the Hospital Executive Council. Those agreements included the following components.

- 1) Certification by an Access Coordinator at each hospital that the need for the program was the barrier to the discharge of each patient.
- 2) A community wide pool of funding.
- 3) Distribution of Program Development Funds for specific types of care by the Hospital Executive Council.

It was intended that Program Development Funds should support the development of these services in nursing homes, rather than being an indefinite source of funding. For this reason, the funding was phased out as nursing homes implemented most of the services.

The study was carried out using patient specific data from each of the hospitals by the Hospital Executive Council. These data were obtained through Business Associate Agreements with each of the hospitals. The Council functions as a mechanism for the development of multihospital studies in the Syracuse metropolitan area.

The study data included quantitative information concerning utilization of the Subacute and Complex Care Programs and their impact on hospital lengths of stay. These data were collected from the Hospital Executive Council which coordinated the operation of the programs.

The study data also included narrative descriptions concerning the implementation and operation of the programs in area nursing homes. This information is summarized for individual programs in the Results section. The initial component of the study focused on use of the Subacute Programs between 2008 and 2016. It included data concerning numbers of patients using each program in the combined Syracuse hospitals between 2008 and 2016. It also included information concerning experiences with the programs in participating nursing homes.

The second component of the study focused on the use of Complex Care Programs in nursing homes between 2014 and 2016. It included numbers of patients using the programs by six month period during 2015 and 2016. It also included information concerning the operation of these programs in the nursing homes.

The third component of the study evaluated inpatient lengths of stay in the combined Syracuse hospitals between 2008 and 2016, the period when the Subacute and Complex Care programs were implemented. It focused on adult medicine and adult surgery including length of stay data and severity adjusted comparisons for each service.

## 4. Results

Data concerning the initial component of the study, including utilization of the Sub-

acute Programs in the Syracuse area, are summarized in **Table 1**. Related information also includes descriptions of the implementation and operation of the programs.

The initial Subacute Program developed by the Syracuse hospitals and area nursing homes focused on the implementation of intravenous therapy for single medications. The program was implemented in 2004 when no long term care facilities in the Syracuse area were providing this service.

The study data indicated that use of the Intravenous Medications Program declined from 72 patients in 2004, when the Program was implemented, to 39 - 40 patients between 2006 and 2012. Between 2004 and 2010, five of the area nursing homes implemented programs to provide single intravenous antibiotics. Most of this utilization involved intravenous vancomycin. By 2010, the Intravenous Medications Program had accomplished its objective. Only one nursing home was interested in continuing to receive Program Development Funds. Support from the Hospital Executive Council, including Program Development Funds, was eliminated in 2015.

The study data indicated that use of the High Cost Oral Medications Program increased from 65 patients in 2005, after the Program was implemented, to 134 patients in 2006. During this period, five area nursing homes implemented use of these medications with program support. After 2010, use of these medications were being used in the nursing homes without the need for the program. At that time, additional Program Development Funds were determined to be unnecessary. It was phased out and remaining medications were combined with the Enhanced Medications Program by 2012.

The Enhanced Medications Program was implemented in 2007 as a means of addressing remaining high cost intravenous and oral medications on a single patient basis. The Program was initiated based on more than 20 specific medications. All of these were specific to medication or medication and dosage. Between 2008 and 2015, use of most of these medications was implemented by area nursing homes without the Program. It was eliminated in 2016. Remaining intravenous medications were addressed by the Complex Care Program.

**Table 1.** Long term care subacute program utilization, Syracuse hospitals, 2004-2016.

	Number of Patients							Total Program Development Funds
	Jan-Dec 2004	Jan-Dec 2006	Jan-Dec 2008	Jan-Dec 2010	Jan-Dec 2012	Jan-Dec 2014	Jan-Jun 2016	
IV Medications	72	60	54	40	39	40	-	\$228,750
High Cost Oral Medications	65	134	75	61	21	-	0	\$178,000
Enhanced Medications	-	-	22	14	9	34	9	\$108,650
Wound Care	-	18	9	7	7	19	2	\$124,000
Bariatric	-	-	10	17	15	6	2	\$229,325
Off Site Services	-	-	15	27	13	24	23	\$169,800
Total	137	212	185	166	104	123	36	\$1,038,525

Source: Hospital Executive Council data.

The Extensive Wound Care Program, focusing on the use of vacuum assisted closure device equipment in nursing homes, was implemented. The study data indicated the utilization of the Program ranged between 18 patients in 2006 and 19 patients in 2014. The original need for the program was based on high costs of the service associated with a single vendor as the provider. After 2012, the entry of additional vendors into the market reduced prices and the need for hospital support. It was eliminated in 2016.

The Subacute Bariatric Program was implemented in 2007 in order to stimulate the development of programs in nursing homes for patients with high Body Mass Indices discharged from hospitals. Program Development Funds were provided to 3 area nursing homes to support the acquisition of lifts, bariatric beds, wheelchairs, and other equipment for these patients, as well as for additional staff and training.

The study data indicated that, because of the limited scope of the program and the small number of nursing homes participating, utilization ranged from 10 patients in 2008 to 17 patients in 2010. By 2015, the participating nursing homes had implemented their own programs for care of bariatric patients and use of the Program was declining. It was eliminated in 2016.

The Patient Transportation Program, for stretcher and wheelchair transports, was implemented in 2007 to support the ability of area nursing homes to admit hospital patients who required transportation to offsite services. Most of these patients required dialysis that could be obtained at a number of area facilities. Most of the program population consisted of Medicare patients, for whom transportation was not a covered service. Medicaid patients were not included because Medicaid reimbursed the services directly to approved transport vendors.

The study data indicated that utilization of the Patient Transportation Program ranged from 13 to 27 patients between 2008 and 2016. Between January and June 2016, 24 patients used the program. Utilization of the Program has continued to justify its operation.

The study data also indicated that the Program Development Funds associated with each of the Subacute Programs ranged between \$108,000 and \$229,000 during their lifetimes. This amounted to approximately \$20,000 - \$40,000 per year for each program.

Data concerning the second component of the study, including utilization of the Complex Care Programs in the Syracuse area, are summarized in **Table 2**. Related information also includes descriptions of the implementation and operation of the programs.

The Complex Care Programs were developed by the Syracuse hospitals in 2015 as means of supporting long term acute care services that were beyond the scope of the Subacute Programs. They involved combinations of medications for patients in need of extended long term care services.

The Multiple Intravenous Medications Program was developed for hospital patients who required more than a single intravenous medication. In addition to the costs of the additional drugs, this need required nursing homes to increase staff beyond levels re-



**Table 2.** Long term complex care program utilization, Syracuse hospitals, 2015-2016.

	Number of Patients				Total Program Development Funds
	January-June 2015	July-December 2015	January-June 2016	Total	
Multiple Intravenous Medications	15	10	3	28	\$78,400
Combination of Medications	4	0	5	9	\$27,000
Wound Care & Medications	3	9	5	17	\$47,600
Behavioral	13	13	1	27	\$81,000
Total	35	32	14	81	\$234,000

Source: Hospital Executive Council.

quired for the original Intravenous Medication Program. Utilization of the Program was 15 patients for January-June 2015 and 10 patients for July-December 2015. Between January and June 2016, utilization declined to 3 patients.

The Combination of Medications Program was developed for hospital patients who required combinations of pharmaceuticals usually including oral and intravenous medications. This need required nursing homes to develop the capacity and the staff skills to administer and monitor these drugs. A number of pharmaceuticals addressed by the program had been included in the Enhanced Medications Program as single drugs. Utilization of the Program was 4 patients for January-June 2015, 0 patients for July-December 2015, and 5 patients for January-June 2016.

Utilization of the Multiple Intravenous Medications Program and the Combination of Medications Program did not meet anticipated volumes in the initial 18 months of operation. It was assumed that area nursing homes were developing the capacity to serve these populations. For this reason, the programs were combined in August 2016.

The Complex Wound Care Program was developed to address the needs of hospital patients who required wound care services plus intravenous medication. Utilization of the Program, like that of the other Complex Care services, was limited, ranging from 3 patients for January-June 2015 to 9 patients for July-December 2015. For this reason it was combined with the other Complex Care Programs in August 2016.

The Behavioral Care Program was developed to meet the needs of hospital patients who required 1 on 1 mental health care after discharge. It required substantial treatment planning by hospital and long term care staffs to implement this service in nursing homes. Utilization of the Program began with 13 patients for January-June 2015 and 13 patients for July-December 2015, but declined to one patient for January-June 2016.

It was determined that the decline in use of the Behavioral Care Program was related to the inability of the Program Development Funds it included to address the needs of most patients requiring 1 on 1 care in nursing homes. Available data suggested the funding that would be required to address these needs was beyond the scope of the

Program. For this reason, it was eliminated in 2016.

The third component of the study focused on inpatient lengths of stay for adult medicine and adult surgery in the combined Syracuse hospitals during implementation of the Subacute and Complex Care Programs. Relevant data are summarized in **Table 3**.

This information suggested that the development and implementation of Subacute and Complex Care programs supported reductions in adult medicine hospital stays between 2014 and 2016 and reductions adult surgery stays between 2008 and 2016. They probably also limited the impact of the medical observation program on adult medicine stays.

This information demonstrated that mean lengths of stay for adult medicine in the combined hospitals increased from 4.98 to 5.45 days between 2008 and 2014 before declining to 5.20 days in 2016. The increase in adult medicine stays that occurred between 2012 and 2014 resulted from the implementation of medical observation regulations by Medicare in 2013. These regulations moved approximately 2,000 patients from the inpatient adult medicine population to outpatient observation. As a result, the remaining adult medicine stays increased.

The data demonstrated that, between 2008 and 2016, the adult medicine mean length of stay increased by 0.22 days, from 4.98 to 5.20 days. During the same period, the severity adjusted national average for the same population increased by 0.33 days, from 4.68 to 5.01 days.

The study data also demonstrated that mean lengths of stay for adult surgery declined from 6.23 to 5.94 days between 2008 and 2016. The medical observation regulations implemented by Medicare were not related to this service. During this period, the severity adjusted national average for this adult surgery population increased by 0.49 days, from 5.63 to 6.12 days.

**Table 3.** Inpatient Mean Lengths of Stay, Adult Medicine and Adult Surgery, Syracuse Hospitals, 2008, 2010, 2012, 2014, 2016.

	2008	2010	2012	2014	2016*
Adult Medicine					
Number of Discharges	28,565	32,221	35,274	33,421	11,259
Mean Length of Stay	4.98	5.18	5.14	5.45	5.20
Severity Adjusted National Average	4.68	4.84	5.00	5.20	5.01
Adult Surgery					
Number of Discharges	19,241	19,170	20,439	20,562	7,554
Mean Length of Stay	6.23	6.25	6.04	6.04	5.94
Severity Adjusted National Average	5.63	5.89	5.75	5.95	6.12

\*2016 data are for January-June. Adult medicine data exclude Diagnosis Related Groups concerning surgery, obstetrics, pediatrics, psychiatry, alcohol/substance abuse treatment, rehabilitation, and all patients aged 0 - 17 years. Adult surgery data exclude Diagnosis Related Groups concerning medicine, obstetrics, pediatrics, psychiatry, alcohol/substance abuse treatment, and all patients aged 0 - 17 years. Source: Hospital Executive Council.

## 5. Discussion

Patients who require subacute and complex care services have been a challenge for hospitals attempting to reduce inpatient stays and improve efficiency. These patients need the continuing services that they received in acute care but in residential settings. These services are frequently not available in rehabilitation or skilled nursing facilities. In recent years, increases in numbers of high severity of illness patients in hospitals have added to this challenge.

Nursing care managers have a major responsibility in supporting the care of these patients. This includes the development of programs and assuring that the needs of individual patients are met. Increasing numbers of elderly patients do not have family or friends to assist as care providers. Care for them must be arranged in rehabilitation or skilled nursing facilities.

In the United States, some states have implemented long term acute care programs which add another level of care to serve the needs of these patients. The Medicaid expenses related to these services have limited the use of these programs. In many communities, which do not have access to these programs, acute hospitals have had to develop their own programs with nursing homes and other providers.

This study described the efforts of hospitals in Syracuse, New York, a small metropolitan area, to develop services for subacute and complex care patients using their own resources in cooperation with local nursing homes. The clinical content of these services, including high cost medications, intravenous therapy, extensive wound care, and bariatric care made their delivery in settings where they had not been available a considerable challenge. In the absence of third party reimbursement for another level of care, the hospitals provided Program Development Funds for limited time periods in order to initiate these services.

The study data suggested that most of these efforts in Syracuse were successful in implementing these programs in nursing homes. Hospital resources helped support the development of intravenous therapy, the use of high cost medications, extensive wound care, and bariatric services in nursing homes where none existed previously.

Of equal or greater importance was the manner in which the Syracuse hospitals were able to phase out support for these services after they were operational for extended periods of time. This process suggested that the participating nursing homes had a genuine interest in the provision of these forms of care and in the development of their own resources to support them.

Although it was difficult to separate the impact of these initiatives from other efforts, the study data indicated that their implementation in Syracuse long term care facilities contributed to a lower rate of increase in adult medicine lengths of stay and a reduction in adult surgery lengths of stay in the Syracuse hospitals between 2008 and 2016. During this period, the severity of illness of patients in both major services increased in the combined hospitals.

The planning and development of the Subacute and Complex Care Programs in Syracuse was not an overly complicated process. It did, however, require both acute and

long term care providers who were interested in making the process work for the benefit of the patient populations involved, as well as for the needs of their own organizations. The work of the Hospital Executive Council was also useful in carrying out the planning process and in maintaining consistency in distribution of program development funds according to the standards set.

As they face the future, nursing care managers need to prepare for continuing changes in how and where medical services are provided, as well as how those services are reimbursed. They need to look at alternative settings and professional preparation needed to offer long term acute services for the population that requires them.

Implementation of programs like the Subacute and Complex Care Programs demonstrate that competing organizations can work together to provide needed services to those they serve. Transitioning patients appropriately benefits all, providing quality care at lower cost and improving access to care in the community.

## References

- [1] Dentzler, S. (2011) Urgent Measures for an Old Problem. *Health Affairs*, **30**, 1626. <http://dx.doi.org/10.1377/hlthaff.2011.0961>
- [2] Keehan, S.P., Cuckler, G.A., Sisko, A.M., Madison, A.J., Smith, S.D., Stone, D.A., Poisal, J.A., Wolfe, C.J. and Lizonitz JM. (2015) National Health Expenditure Projections, 2014-2024: Spending Growth Faster than Recent Trends. *Health Affairs*, **34**, 1407-1417.
- [3] Lizonitz, J.M. (2015) National Health Expenditure Projections, 2014-24: Spending Growth Faster than Recent Trends. *Health Affairs*, **34**, 1407-1417. <http://dx.doi.org/10.1377/hlthaff.2015.0600>
- [4] Riley, G.F. (2007) Long Term Trends in the Concentration of Medicare Spending. *Health Affairs*, **26**, 808-814. <http://dx.doi.org/10.1377/hlthaff.26.3.808>
- [5] Evans, M. (2012) The Early Returns on Accountable Care. *Modern Healthcare*, **42**, S1-S5.
- [6] Joynt, K.E., Gawande, A.A., Orav, E.J. and Jha, A.K. (2013) Contribution of Preventable Acute Care Spending to Total Spending for High Cost Medicare Patients. *JAMA*, **309**, 2572-2578. <http://dx.doi.org/10.1001/jama.2013.7103>
- [7] Muchmore, S. (2016) Few Docs Ready for Risk. *Modern Healthcare*, **46**, 20-22.
- [8] Whitman, E. (2016) Bundled Payment Expansion Brings Providers More Risk and Opportunity. *Modern Healthcare*, **46**, 8-10.
- [9] Weil, A.R. (2015) Hospital Costs and Quality. *Health Affairs*, **34**, 1263. <http://dx.doi.org/10.1377/hlthaff.2015.0786>
- [10] Skinner, J., Chandra, A., Goodman, D. and Fisher, E.S. (2009) The Elusive Connection between Health Care Spending and Quality. *Health Affairs*, **28**, w119-w123. <http://dx.doi.org/10.1377/hlthaff.28.1.w119>
- [11] Rau, J. (2014) Medicare Fines 2610 Hospitals in Third Round of Readmission Penalties. *Kaiser Health News*.
- [12] Berenson, R.A., Paulus, R.A. and Kalman, N.S. (2012) Medicare's Readmission Reduction Program—A Positive Alternative. *New England Journal of Medicine*, **366**, 1364-1366. <http://dx.doi.org/10.1056/NEJMp1201268>
- [13] Gawande, A.A. (2011) The Hot Spotters: Can We Lower Costs by Giving the Neediest Patients Better Care? New York.

- [14] Hong, C.S., Siegel, A.L. and Ferris, T.G. (2014) Caring for High Need, High Cost Patients: What Makes for a Successful Care Management Program? Commonwealth Fund, New York. <http://dx.doi.org/10.15868/socialsector.25007>
- [15] Lagoe, R., Pasinski, T., Kronenberg P., Quinn, T. and Schaengold, P. (2005) Linking Health Services at the Community Level. *Canada Health Care Quarterly*, **9**, 60-65.
- [16] Lagoe, R., Pernisi, L. and Littau, S. (2015) Reducing Hospital Stays through Subacute and Complex Care Programs. *Open Journal of Nursing*, **5**, 848-854.  
<http://dx.doi.org/10.4236/ojn.2015.510090>



Scientific Research Publishing

**Submit or recommend next manuscript to SCIRP and we will provide best service for you:**

Accepting pre-submission inquiries through Email, Facebook, LinkedIn, Twitter, etc.  
 A wide selection of journals (inclusive of 9 subjects, more than 200 journals)  
 Providing 24-hour high-quality service  
 User-friendly online submission system  
 Fair and swift peer-review system  
 Efficient typesetting and proofreading procedure  
 Display of the result of downloads and visits, as well as the number of cited articles  
 Maximum dissemination of your research work

Submit your manuscript at: <http://papersubmission.scirp.org/>

Or contact [ojn@scirp.org](mailto:ojn@scirp.org)

# Physical Accessibility for Disabled People: Analysis of Toilet Facilities in Primary Health Care Units

Aline Cruz Esmeraldo Áfio<sup>1\*</sup>, Luciana Vieira de Carvalho<sup>1</sup>, Juliana Freitas Marques<sup>1</sup>, Paula Marciana Pinheiro de Oliveira<sup>2</sup>, Paulo Cesar de Almeida<sup>3</sup>, Lorita Marlena Freitag Pagliuca<sup>1</sup>

<sup>1</sup>Nursing Department, Federal University of Ceará (UFC), Fortaleza, Brazil

<sup>2</sup>University of International Integration of the Afro-Brazilian Lusophony (UNILAB), Redenção, Brazil

<sup>3</sup>State University of Ceará (UECE), Fortaleza, Brazil

Email: \*lineafio@hotmail.com, lucianavcarvalho@hotmail.com, juliana.fmarques@outlook.com, paulamarciana@yahoo.com.br, pc2015almeida@gmail.com, pagliuca@ufc.br

**How to cite this paper:** Áfio, A.C.E., de Carvalho, L.V., Marques, J.F., de Oliveira, P.M.P., de Almeida, P.C. and Pagliuca, L.M.F. (2016) Physical Accessibility for Disabled People: Analysis of Toilet Facilities in Primary Health Care Units. *Open Journal of Nursing*, 6, 948-957.

<http://dx.doi.org/10.4236/ojn.2016.611091>

**Received:** October 18, 2016

**Accepted:** November 21, 2016

**Published:** November 24, 2016

Copyright © 2016 by authors and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

**Background:** Accessibility enables the effective participation of disabled persons in public and private areas and the use of urban equipment and street furniture. **Objective:** This study aimed to analyze the physical accessibility of toilet facilities in urban and rural primary health care units. **Methods:** It was a quantitative descriptive study conducted in 157 Primary Health Care Units of 16 municipalities in the Baturité Massif region, Ceará, Brazil. The study took place from August 2014 to May 2015, with a checklist type form, designed from the Technical Standard 9050 of the Brazilian National Standards Organization, specifying the ideal access conditions established by law to allow mobility of persons with physical disabilities. Data were processed through the Statistical Package for the Social Sciences software and organized into tables. **Results:** Toilets designed for physically disabled people were accessible as the location and signs (59.9%), identified with symbols for males and females (57.3%); however, the doorway width was smaller than needed to accommodate a wheelchair (77.7%). Inside the bathroom, only the forward approach was possible (59.9%). Grab bars positioned on the side and rear walls were inadequate or non-existent (67.6%); toilet seats (91.1%) and toilet paper dispensers (96.2%) were mostly in inaccessible heights; flush controls in appropriate height (59.2%) and activated by light pressure (58%). Sinks without pedestal (51%), but higher than recommended (80.3%) and without single handle faucets (95.6%). It was verified that the toilets of basic health units located in urban areas had better accessibility conditions compared to those in rural areas. **Conclusion:** Results showed that the analyzed units presented physical inaccessibility in some toilet facilities, making it difficult or even

impossible the accessibility for the disabled. The inclusion of accessibility features in health services for this clientele provides equal opportunities and social inclusion.

## Keywords

Health Services Accessibility, Disabled Persons, Toilet Facilities

---

## 1. Introduction

Accessibility concerns the physical conditions or the communication elements that enable safe and autonomous participation of people in public and private areas, in the use of urban equipment and street furniture, providing greater social inclusion and better quality of life [1]. Ensuring the access of disabled people is an act that respects their freedom of movement, allowing them to use essential public services.

It is worth highlighting the difference between access and accessibility. Even though access complements accessibility, these are two distinct concepts, in which accessibility enables people to come to the environment, while access provides the appropriate use of services to achieve better results [2].

There are many challenges in evaluating the accessibility of specific groups, such as people with mobility issues in a particular urban space. Methods that are usually based on technical standards and legislation can be adapted to seek a broader approach to identify and understand accessibility, as well as the perception of the space and environment where these groups live [3].

Despite the extensive Brazilian law to guarantee the accessibility right to health care of disabled persons, most are not respected. Legislation focuses on basic precepts to promote accessibility to spaces and urban equipment, emphasizing the importance of architectural planning of facilities to ensure the universal right to access and quick and safe mobilization [4].

Nevertheless, the association between the dimensions of accessibility, both in terms of health services organization and geographical aspects, mediated by users' empowerment, has not been achieved, as well as analyzing the reasons why these problems remain [5].

Health care accessibility of disabled people comprises a set of strategies and equipment incorporated and linked to the physical space. It should include practices and care that point to independence and social inclusion processes from the first interventions to the optimization of spaces available in health services [6].

Additionally, it refers to the characteristics of resources that facilitate or limit its use by potential clients, corresponding to the aspects of services with special significance when analyzed according to the impact they have on people's ability to use them. Therefore, accessibility is an important supply factor in explaining the variations of how the population uses health services, representing a crucial dimension in studies about equity in health systems [7].



Among the various locations offered to the population in primary health care services, access to toilet facilities should promote the independence of disabled persons, assuring their intimacy and privacy. Going to the bathroom can become an extremely difficult task, even impossible sometimes, when the right measures for the physically impaired or people with reduced mobility are not implemented [6].

Developing projects that strengthen the accessibility and designing manuals and routines for primary health care, to encourage the humanization through welcome practices, along with intersectoral actions, favor the expansion of comprehensive care [8].

By recognizing the legitimate rights of accessibility and social integration of disabled people, it is intended to contribute to mapping architectural barriers to their accessibility to toilet facilities of basic health services. Thus, this study seeks to contribute to the care and teaching in the field of nursing and areas of health sciences, human sciences, and engineering [9].

Given the importance of primary health care as the health system gateway, this work aims to analyze the physical accessibility to toilet facilities in urban and rural primary health care units.

## 2. Methods

It was a quantitative research of descriptive approach consisting of measurement procedures of the architectural conditions of toilet facilities that compose the physical structure of Primary Health Care Units located in the Baturité Massif region, in the State of Ceará, Brazil. This location was chosen due to the high prevalence of disabled persons in the population and lack of previous studies on the health services accessibility.

Study was conducted from August 2014 to May 2015. Data collection comprised 157 Primary Health Care Units distributed among the 16 municipalities of that region. The sample was extracted from the National Register of Health Institutions of the Ministry of Health, a system that provides data on the health care network in the Brazilian territory.

For data collection, a checklist tool entitled Record of Physical Accessibility to Health Units was used, constructed based on Technical Standard 9050 (NBR 9050) of the Brazilian National Standards Organization, which determines standard measures required to provide appropriate access conditions to buildings, furniture, spaces, and urban equipment to the mobility of disabled persons [10].

The instrument is structured in two parts, the first relating to the unit's identification data and the second containing topics on the characteristics of the various sectors that constitute the physical structure of health service units, particularly analyzing the topic Toilet facilities with the following items: location; signs; use for both sexes; doorway width; wheelchair maneuvering areas (forward, 90°, 180°, and 360° rotation, and free space); grab bars; toilet seats; toilet paper dispensers; flush control; sink and faucet. Response options were: Accessible (A), accessible structure; Inaccessible (I), inaccessible structure; Absence (AB), without the structure to be evaluated; Does not apply (DNA), the place did not require the structure; Renovation (RE), rooms being renovated; Not

Collected (NC), place closed at the time of collection; and Without the Place (WP), the location to be assessed did not exist.

During data collection, materials such as measuring tapes and digital cameras were used, and all the survey participants were trained for proper filling of the instrument and correct use of support materials.

Data obtained were entered into spreadsheet, through Microsoft Excel®, in two databases in order to avoid any typing errors. For data analysis, the Statistical Package for the Social Sciences (SPSS) software version 20.0 was used, and data were later presented in tables with absolute and relative frequencies. The Binomial test was applied to compare the variables Accessible and Inaccessible, Chi-square test to assess the association between the variables of interest, and Odds Ratio (OR) to measure the magnitude of the effect, adopting a 95% confidence interval (95% CI). The level of statistical significance was set at 5% ( $p < 0.05$ ).

The Research Ethics Committee of the University of International Integration of the Afro-Brazilian Lusophony (UNILAB) approved the study under protocol No. 652, 134/2014. The study followed the ethical and legal principles in accordance with resolution of the National Health Council, concerning and regulating the guidelines and rules involving research with human beings (Resolution No. 466, 2012). Authorization of the directors of health facilities was requested by signing the Free and Informed Consent Form (FICF).

### 3. Results

**Table 1** shows that toilet facilities were accessible as the location and signs, with statistically significant differences ( $p < 0.001$  and  $0.010$ , respectively). Regarding the separation of bathrooms by gender, it was found that 57.3% were divided into male and female.

Of all toilet facilities, 77.7% have inaccessible doorways ( $p < 0.001$ ), despite presenting space to perform the 1.20 m forward approach ( $p = 0.006$ ). Nonetheless, in absolute majority, there were no obstacle-free space for maneuvering the wheelchair in  $90^\circ$ ,  $180^\circ$  and  $360^\circ$ , thus being considered inaccessible ( $p < 0.001$ ).

Regarding the presence of horizontal bars on the side and rear walls, 67.6% were allocated inappropriately or non-existent, constituting the inaccessibility of this item with significant results ( $p = 0.019$ ).

Toilet seats and toilet paper dispensers were evaluated mostly as inaccessible to the physically disabled ( $p < 0.001$ ), considering they did not contain accessibility aspects, like appropriate height. Flush controls, however, were considered accessible as the height and activation by light pressure ( $p = 0.002$  and  $0.006$ , respectively).

Sinks presented accessibility aspects, such as the absence of pedestals (51%), but the height and faucet type were inadequate ( $p = 0.000$ ).

**Table 2** reveals that items with favorable accessibility results were from the urban units, with just one item from the rural area, appropriate flush control height ( $p = 0.040$ ).

**Table 1.** Distribution of basic health units according to accessible and inaccessible items. Baturité Massif region, Ceará, Brazil, 2014.

Variable	Accessible		Inaccessible		P	DNA/RE/NC /WP (%)
	n	%	n	%		
Easy location	125	79.6	30	19.1	<0.001	2 (1.3%)
Signs	94	59.9	61	38.9	0.010	2 (1.3%)
For both sexes	90	57.3	65	41.4	0.054	2 (1.3%)
Doorway width of 80cm	25	15.9	122	77.7	<0.001	10 (6.4%)
1.20m forward approach	94	59.9	59	37.6	0.006	4 (2.5%)
1.20 × 1.20 m 90° maneuver	52	33.1	101	64.3	<0.001	4 (2.5%)
1.20 × 1.50 m 180° maneuver	36	22.9	117	74.5	<0.001	4 (2.5%)
1.50 × 1.50 m 360° maneuver	30	19.1	123	78.3	<0.001	4 (2.5%)
1.20 × 0.80 m free space	35	22.3	118	75.2	<0.001	4 (2.5%)
Grab bars on side and rear walls	47	29.9	106	67.6	0.019	4 (2.5%)
80 cm horizontal bars	20	12.7	133	84.8	0.013	4 (2.5%)
Side bars 75 cm above the finish floor	3	1.9	150	95.6	<0.001	4 (2.5%)
Toilet seat 46 cm above the finish floor	10	6.4	143	91.1	<0.001	4 (2.5%)
Toilet paper dispenser 50 to 60 cm above the finish floor and 15 cm from the front end	2	1.3	151	96.2	<0.001	4 (2.5%)
Flush control at a maximum height of 1m above the finish floor	93	59.2	60	38.3	0.002	4 (2.5%)
Flush control activated by light pressure	91	58.0	62	39.5	0.006	4 (2.5%)
Sink without pedestal	80	51	73	46.5	0.181	4 (2.5%)
Sink between 78 and 80 cm above the finish floor	27	17.2	126	80.3	<0.001	4 (2.5%)
Single handle faucet	3	1.9	150	95.6	<0.001	4 (2.5%)

p-value of the binomial test for comparing the variables accessible and inaccessible.

Items of the toilet facilities of basic health units associated with the urban area were signs (OR = 4.6;  $p < 0.0001$ ), forward approach (OR = 2.2;  $p = 0.025$ ), 90° (OR = 3.9;  $p < 0.0001$ ), 180° (OR = 5.4;  $p < 0.0001$ ), and 360° rotations (OR = 6.6;  $p < 0.0001$ ), and single handle faucet (OR = 4.6;  $p < 0.0001$ ). Therefore, they were more likely to have accessibility characteristics.

#### 4. Discussion

Primary health care is the first occasion of user assistance in the health system, thus the assistance model should meet the specific needs of various population groups, including disabled people. Nevertheless, in Brazil, a difficult access of this public to primary care is verified, aggravated by the development of fragile, inconsistent, and discontinuous health actions, demonstrating that it does not meet their real needs [6].

**Table 2.** Percentage distribution of accessible locations of basic health units according to rural or urban area. Baturité Massif region, Ceará, Brazil, 2014.

Variable	Rural	Urban	OR* (95% CI)	p**
Easy location	83.3	76.9	0.7 (0.3; 1.5)	0.319
Signs	46.7	80.0	4.6 (2.2; 9.5)	<0.0001
For both sexes	52.2	66.2	1.8 (0.9; 3.4)	0.083
Doorway width of 80 cm	16.3	18.0	1.1 (0.5; 2.7)	0.780
1.20 m forward approach	53.9	71.9	2.2 (1.1; 4.3)	0.025
1.20 × 1.20 m 90° maneuver	21.3	51.6	3.9 (1.9; 7.9)	<0.0001
1.20 × 1.50 m 180° maneuver	11.2	46.6	5.4 (2.4; 12.3)	<0.0001
1.50 × 1.50 m 360° maneuver	7.9	35.9	6.6 (2.6; 16.6)	<0.0001
1.20 × 0.80 m free space	11.2	39.1	5.1 (2.2; 11.6)	<0.0001
Grab bars on side and rear walls	59.5	69.4	1.6 (0.6; 4.1)	0.373
80 cm horizontal bars	31.2	35.7	1.2 (0.4; 3.6)	0.714
Side bars 75 cm above the finish floor	6.2	3.6	0.6 (0.1; 6.5)	0.635
Toilet seat 46 cm above the finish floor	4.5	9.7	2.3 (0.6; 8.4)	0.208
Toilet paper dispenser 50 to 60 cm above the finish floor and 15 cm from the front end	3.4	0.0	0.6 (0.5;0.7)	0.239
Flush control at a maximum height of 1 m above the finish floor	69.8	53.2	0.5 (0.3; 0.9)	0.040
Flush control activated by light pressure	64.0	58.1	0.8 (0.4; 1.5)	0.468
Sink without pedestal	50.6	62.9	1.7 (0.8; 3.2)	0.142
Sink between 78 and 80cm above the finish floor	21.0	16.1	0.7 (0.3; 1.7)	0.462
Single handle faucet	0.0	4.8	0.4 (0.3; 0.5)	0.045

\*OR: Odds ratio; \*\*Chi-square p-value.

The right to accessibility preserves the individual autonomy. In this sense, it is essential to evaluate the movements of disabled persons in health services, considering their independence, ease, and security in using the space, existing equipment, and furniture. Among the various sectors that compose the physical structure of health units, toilet facilities are one of the main areas that need adaptation to provide privacy, maintenance of bodily functions, and proper personal hygiene to users with reduced mobility.

In this study, inaccessibility was observed in most toilet facilities in health units, which causes disabled users to experience difficulties in using this space, in addition to dependence, stressful moments, embarrassment, discomfort, and losses in performing self-care. The location and signs of toilets met the standards of NBR 9050, since 79.6% were in easily accessible locations and 59.9% had indicative toilet signs.

These points are worth highlighting because a study evaluating the infrastructure of health units in the state of Paraíba, Brazil, identified an opposite reality, observing that the bathrooms were not arranged in accessible locations, away from the main circula-

tion and with inappropriate signage, representing one of the items with the most critical accessibility conditions [11].

It is noteworthy that the presence of indicative toilet signs predominated in units located in the urban area (80.0%), showing greater effort to provide access to the different environments in the health facility through their identifications.

The Manual of Physical Structure of Basic Health Units, produced by the Brazilian Ministry of Health, establishes that the units must have separate toilet facilities for each sex, with at least one designed for disabled people, meeting the technical standards [12]. The majority (57.3%) of toilet facilities were arranged separately for male and female, in accordance with the importance of respecting the privacy and following the existing rules in force regarding the architectural planning for structuring a health care unit.

Regarding the item doorways with minimum width of 80cm, inaccessibility prevailed in 77.7% of bathrooms, as they were narrow and prevented the passage of wheelchairs.

This finding corroborates a study conducted in the State of Paraíba, Brazil, which found that in 70% of the units, the bathroom doors prevented the access of the handicapped (Rocha *et al.*, 2012). Inadequate doorways violate the concept of accessibility, since all individuals have equal rights to enter all physical spaces and enjoy the services provided autonomously [6].

Toilet facilities should have enough space to allow movement of wheelchair users and proper use of bathroom accessories by providing room for forward, 90°, 180°, and 360° transfer and approach maneuvers [10]. Most toilets were considered inaccessible for not having enough space for wheelchair movement, especially regarding rotational movements (64.3% for 90°, 74.5% for 180°, and 78.3% for 360°), which prevents the independent and private use of the environment.

It is worth mentioning that the units with accessibility in these items were located predominantly in urban areas, indicating greater infrastructure of urban units compared to those in rural areas, since toilet facilities require a greater space to allow the various rotational movements.

The lack or inadequate placement of grab bars also hinders the use of bathrooms. Aimed at offering support, balance, and safety during the use of toilet accessories, they require length and mounting height in compliance with the technical standard [10]. A total of 67.6% of toilets had inaccessible bars on the side and rear walls, as they were installed in improper height.

These elements were also observed as inaccessible in a study that analyzed accessibility issues in primary health care services in the State of Pernambuco, Brazil, which verified that 97% of the units did not have accessible toilets, highlighting the absence of grab bars in bathrooms [13].

Regarding toilet seats, they were inaccessible because they did not have a 46 cm height above the finish floor (91.1%). Additionally, toilet paper dispensers (96.2%) were non-standard; they should be at a height between 50 and 60 cm above the finish floor and 15 cm from the front end [10].

Sinks were also evaluated. Among those with physical accessibility items, it is hig-

highlighted that 51% had sink without pedestal, thus allowing the wheelchair approach. Nonetheless, when measuring its height, 80.3% were inaccessible, as well as the faucets, which should be of single handle type.

Evaluation of physical accessibility of bathrooms in 27 schools of Chapecó, Santa Catarina, Brazil, identified that only 13 had toilet facilities adapted for disabled people. Different from the present study, 76.92% of analyzed bathrooms had suspended wash-basins from 78 cm to 80 cm above the finish floor [14].

This type of evaluation is also common in other environments, such as long-term care facilities for the elderly. A study conducted in Portugal in this kind of institution detected that the position of sanitary equipment also constituted a limiting agent, hindering the proper use by persons with reduced mobility, besides the restricted access to the toilet, resulting in physical constraints. As for the sinks, they are lower than required by legislation and do not have single handle faucets [15].

The lack of accessible toilets for disabled people is evident. When asked, users themselves reported being unaware of fully accessible toilets for disabled persons in health services, because even if they exist, they are inappropriate for use [16].

People with physical disabilities have several mobility limitations, ranging from the inability to turn on a faucet to depend on a wheelchair for locomotion. This diversification implies an underreporting of this public, since many reject the international symbol of accessibility, represented by a wheelchair. The concept accepted by most of this population consists of people with limited mobility, not disabled persons, and they reject being identified as wheelchair users. In this context, they do not exercise their rights [17].

Toilets designed for physically disabled people were accessible as the location and signs, identified with symbol for male and female, but with doorway narrower than required to accommodate a wheelchair. Inside the bathroom, only the forward approach was available.

Grab bars on the side and rear walls were inadequately positioned or non-existent; toilet seats and toilet paper dispensers were mostly in inaccessible heights; flush controls in proper height and activated through light pressure. Sinks without pedestal, but higher than recommended and without single handle faucets. It was found that the toilet facilities in basic health units located in urban areas had better access conditions than those in rural areas.

With this purpose, it is imperative to investigate health services access barriers to support health planning. Information about the access of people with disabilities or mobility restriction in the Brazilian health system are incipient, especially in the socioeconomically disadvantaged regions. Thus, there are few indicators that assist in monitoring and evaluating the performance of the health system, essential tools for planning actions [18].

## 5. Conclusions

Regarding the health sector, the access of disabled persons is still incipient, since archi-

tectural barriers are easily observed in health care services, constituting obstacles to health care. Awareness and commitment of leaders, managers, and professionals need to be established to create favorable spaces to universal health care.

It is worth highlighting that a report describing the problems identified in the toilet facilities of health units was made and delivered to the leaders of the municipalities. Nevertheless, since this is a cross-sectional study, a new assessment did not take place. Thus, it is suggested to conduct a longitudinal research to verify the occurrence of any changes after this study.

Although limited in assessing only the toilet facilities of health units in a specific region, this study showed that physical accessibility should be considered in any location, since eliminating these barriers provides significant value to this population in using health services, enabling equality and equity for disabled people. Inclusive awareness and sensitivity to the reality of this group are essential to meet their basic and specific human needs.

## References

- [1] Decreto n. 7.612, de 17 de novembro de 2011 (2011) Plano Nacional dos Direitos da Pessoa com Deficiência—Viver sem Limite. Diário Oficial da União. Ministério da Saúde, Brasília.
- [2] Starfield, B. (2002) Atenção Primária: Equilíbrio entre necessidades de saúde, serviços e tecnologia. Ministério da Saúde, Brasília.  
[http://bvsmis.saude.gov.br/bvs/publicacoes/atencao\\_primaria\\_p1.pdf](http://bvsmis.saude.gov.br/bvs/publicacoes/atencao_primaria_p1.pdf)
- [3] Machado, M.F. and Lima, J.P. (2015) Avaliação multicritério da acessibilidade de pessoas com mobilidade reduzida: Um estudo na região central de Itajubá (MG). *Revista Brasileira de Gestão Urbana*, **7**, 368-382.  
[http://www.scielo.br/scielo.php?script=sci\\_abstract&pid=S2175-33692015000300368&lng=en&nrm=iso&tlng=en](http://www.scielo.br/scielo.php?script=sci_abstract&pid=S2175-33692015000300368&lng=en&nrm=iso&tlng=en)
- [4] Carvalho, L.V., Áfio, A.C.E., Júnior Rodrigues, J.C., Rebouças, C.B.A. and Pagliuca, L.M.F. (2014) Advances in Health Promotion for People with Disabilities and the Laws of Brazil. *Health*, **6**, 2365-2374. [http://file.scirp.org/Html/1-8203147\\_50396.htm](http://file.scirp.org/Html/1-8203147_50396.htm)  
<https://doi.org/10.4236/health.2014.618272>
- [5] Amaral, F.L.J.S., Holanda, C.M.A., Quirino, M.A.B., Nascimento, J.P.S., Neves, R.F., Ribeiro, K.S.Q.S. and Alves, S.B. (2012) Accessibility for People with Disabilities or Permanent Mobility Restrictions to the Unified Health System. *Ciênc Saúde Coletiva*, **17**, 1833-1840.  
[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1413-81232012000700022](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1413-81232012000700022)
- [6] Girondi, J.B.R. and Santos, S.M.A. (2011) Deficiência física em idosos e acessibilidade na atenção básica em saúde: Revisão integrativa da literatura. *Revista Gaúcha de Enfermagem (Online)*, **32**, 378-384. <http://www.scielo.br/pdf/rgenf/v32n2/a23v32n2.pdf>
- [7] Donabedian, A. (1973) Aspects of Medical Care Administration. Harvard University Press, Boston.
- [8] Oliveira, F.S., Almeida, L.G.N., Oliveira, M.A.S., Gil, G.B., Cunha, A.B.O., Medina, M.G. and Pereira, R.A.G. (2012) Access to Primary Health Care in a Sanitary District of Salvador. *Ciênc Saúde Coletiva*, **17**, 3047-3056.  
[http://www.scielo.br/scielo.php?script=sci\\_abstract&pid=S1413-81232012001100021&lng=en&nrm=iso&tlng=en](http://www.scielo.br/scielo.php?script=sci_abstract&pid=S1413-81232012001100021&lng=en&nrm=iso&tlng=en)
- [9] Vasconcelos, L.R. and Pagliuca, L.M.F. (2006) Demarcation of the Accessibility of the Han-



- dicapped to a Basic Health Services. *Escola Anna Nery*, **10**, 494-500.  
[http://www.scielo.br/scielo.php?script=sci\\_abstract&pid=S1414-81452006000300019&lng=en&nrm=iso&tlng=en](http://www.scielo.br/scielo.php?script=sci_abstract&pid=S1414-81452006000300019&lng=en&nrm=iso&tlng=en)
- [10] Associação Brasileira de Normas Técnicas (2004) NBR 9050: Acessibilidade a edificações, mobiliário, espaços e equipamentos urbanos. Associação Brasileira de Normas Técnicas, Rio de Janeiro.  
[http://www.pessoacomdeficiencia.gov.br/app/sites/default/files/arquivos/%5Bfield\\_generico\\_imagens-filefield-description%5D\\_24.pdf](http://www.pessoacomdeficiencia.gov.br/app/sites/default/files/arquivos/%5Bfield_generico_imagens-filefield-description%5D_24.pdf)
- [11] Rocha, A.C.D., Sousa, C.P.C., Queiroz, D. and Pedraza, D.F. (2012) Primary Health Care Evaluation: A New Approach. *Revista de administração em saúde (RAS)*. *Revista de Administração em Saúde*, **14**, 71-79.  
[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0104-12902011000400010](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-12902011000400010)
- [12] Ministério da Saúde (2008) Manual de estrutura física das unidades básicas de saúde: saúde da família (2a ed.). Ministério da Saúde, Brasília.  
[http://bvsms.saude.gov.br/bvs/publicacoes/manual\\_estrutura\\_fisica\\_ubs.pdf](http://bvsms.saude.gov.br/bvs/publicacoes/manual_estrutura_fisica_ubs.pdf)
- [13] Albuquerque, M.S.V., Lyra, T.M., Farias, S.F., Mendes, M.F.M. and Martelli, P.J.L. (2014) Acessibilidade aos serviços de saúde: Uma análise a partir da Atenção Básica em Pernambuco. *Saúde Debate*, **38**, 182-194.  
[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0103-11042014000600182](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-11042014000600182)  
<https://doi.org/10.5935/0103-1104.2014s014>
- [14] Gallo, E.C., Orso, K.D. and Fiório, F.B. (2011) Analysis of the Accessibility of People with Physical Deficiency in the Schools of Chapecó-SC and the Role of Physiotherapist in the School Setting. *O Mundo da Saúde*, **35**, 201-207.  
[http://bvsms.saude.gov.br/bvs/artigos/analise\\_acessibilidade\\_pessoas\\_deficiencia\\_fisica\\_escolas.pdf](http://bvsms.saude.gov.br/bvs/artigos/analise_acessibilidade_pessoas_deficiencia_fisica_escolas.pdf)
- [15] Paiva, M.M.B. and Villarouco, V. (2012) Accessibility in Collective Housing for the Elderly: A Case Study in Portugal. *Work*, **41**, 4174-4179.  
<https://www.ncbi.nlm.nih.gov/pubmed/22317362>
- [16] Castro, S.S., Lefèvre, F., Lefèvre, A.M.C. and Cesar, C.L.G. (2011) Acceso a los servicios de salud por personas con discapacidad. *Revista de Saúde Pública*, **45**, 99-105.  
[http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0034-89102011000100011&lng=pt&tlng=pt](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-89102011000100011&lng=pt&tlng=pt)  
<https://doi.org/10.1590/S0034-89102010005000048>
- [17] Pagliuca, L.M.F., Oliveira, P.M.P., Mariano, M.R., Silva, J.M., Almeida, P.C. and Oliveira, G.O.B. (2015) Pessoa com deficiência: Construção do conceito por esta população. *Revista Rene*, **16**, 705-713. <http://www.periodicos.ufc.br/index.php/rene/article/view/2835>
- [18] Szwarcwald, C.L., Mendonça, M.H.M. and Andrade, C.L.T. (2006) Indicadores de atenção básica em quatro municípios do Estado do Rio de Janeiro, 2005: Resultados de inquérito domiciliar de base populacional. *Ciência & Saúde Coletiva*, **11**, 643-655.  
<http://www.scielo.br/pdf/csc/v11n3/30980.pdf>  
<https://doi.org/10.1590/S1413-81232006000300013>

# Effects of Band Therapy Using Music on Grasping Power, Depression, and Personal Relationships in Nursing-Home-Dwelling Elderly Individuals

Eun Kyung Chang<sup>1</sup>, Heeok Park<sup>2\*</sup>, Miran Jung<sup>3</sup>, Hae Kyeong Lee<sup>4</sup>, Jieun Park<sup>5</sup>, Mijung Park<sup>2</sup>, Minsuk Gang<sup>6</sup>

<sup>1</sup>Nursing Department, Daegu Health College, Daegu, South Korea

<sup>2</sup>College of Nursing, Keimyung University, Daegu, South Korea

<sup>3</sup>Nursing Department, Daegu Fatima Hospital, Daegu, South Korea

<sup>4</sup>Nursing Department, Keimyung University Dongsan Medical Center, Daegu, South Korea

<sup>5</sup>Nursing Department, Kyungpook National University Medical Center, Daegu, South Korea

<sup>6</sup>School of Nursing, Youngjin College, Daegu, South Korea

Email: mayonaka@naver.com, \*hopark@kmu.ac.kr, miran880313@naver.com, cocolee1747@hanmail.net, jellie9@naver.com, kms4790@naver.com

**How to cite this paper:** Chang, E.K., Park, H., Jung, M., Lee, H.K., Park, J., Park, M. and Gang, M. (2016) Effects of Band Therapy Using Music on Grasping Power, Depression, and Personal Relationships in Nursing-Home-Dwelling Elderly Individuals. *Open Journal of Nursing*, 6, 958-968.

<http://dx.doi.org/10.4236/ojn.2016.611092>

**Received:** September 27, 2016

**Accepted:** November 25, 2016

**Published:** November 28, 2016

Copyright © 2016 by authors and Scientific Research Publishing Inc.  
This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

## Abstract

The current study examined the effects of band therapy using music on grasping power, depression, and personal relationships among residents of a nursing home. Thirty subjects participated in the study. The band therapy included greetings, warm-up exercises with music, singing with dance, playing instruments, closing speech, and stretching with background music. Band therapy was held for 40 minutes once per week, for a total of four sessions, in the activity room of the nursing home. Findings showed that grasping power, depression, and personal relationships were improved at posttest, but the differences were not statistically significant. A better study design to compare the effects of band therapy with the other group, and a more simple and repeated intervention for the elderly to follow without stress might be necessary.

## Keywords

Band Therapy, Music, Grasping Power, Depression, Personal Relationships, Nursing Home

## 1. Introduction

The number of older adults in South Korea has increased to 21% of the population over

the past 5 years, and the percentage of older adults staying at long-term care facilities has increased to 57% over the same period [1]. Older adults staying at nursing homes have diverse health problems, including physical and psychosocial problems. Among them, functional decline, depression, and low levels of social interaction are common, and serious problems must be controlled [2] [3].

Depression is one of the most common psychosocial problems among older adults staying at long-term care facilities [4] [5] and 40 - 48 percent of residents at long-term care facilities show depression, compared to the 33 percent of older adults living in their own home [6]. Depression at long-term care facilities is related to change of living environment, personal interaction and social support system, and isolation from family [7]. Because of depression, residents also show reduced interaction with other residents at the facilities. Although depression is serious and common in long-term care facilities, depression is under-assessed and under-managed by health professionals [8].

Personal relationships are generally defined as relationships among more than two persons and the psychological relationship among members of a group [9]. The lack of personal relationships is related to low self-esteem, depression, loneliness, social/emotional connectedness, isolation, and reduced quality of life, and it is a causal factor in personality disorders and negative social adjustment [10] [11] [12] [13]. Personal relationships are important among elderly individuals, but personal relationships among residents of long-term care facilities have not yet been studied in South Korea.

To improve depression and personal relationships among elderly individuals, diverse interventions such as music intervention, massage therapy, group art therapy, horticultural activities, band therapy, and soon have been implemented [9] [14] [15] [16] [17]. Among them, band therapy is highly recommended to improve depression and personal relationships, as it is inexpensive and easy to provide. Previous studies of band therapy have used elastic bands for physical and psychosocial factors such as pain, fatigue, flexibility, depression, quality of life, and so on [18] [19] [20] [21]. However, the previous studies are limited to healthy or home-dwelling elderly individuals or those using community health centers [18] [20] [22], so there is a need to investigate the effects of elastic bands on grasping power, depression, and personal relationships for residents staying at long-term care facilities. The purpose of the current study was to test the effects of band therapy on grasping power, depression, and personal relationships among residents at long-term care facilities.

## 2. Methods

### 2.1. Participants

The study was a quasi-experimental one-group pretest/posttest design. Participants were 30 elderly individuals staying at a nursing home in D-city, South Korea. Convenience sampling was used. Inclusion criteria were as follows: 65 or older, no physical impairment, ability to communicate, understood the purpose of study, and willing to participate in the study. The minimum size of a group was 27 based on the G \*Power

3.1. Program analysis [23] with moderate effect size of 0.50, power of 0.80, and alpha value of 0.50. Therefore, the number of participants in this study satisfied the minimum samples size.

## 2.2. Instruments

- Grasping power  
Grasping power was measured using a dynamometer (Lavisen's KS-301). For the measurement, subjects stand upright, straighten their arms to the side, and drop them until they are 15° from the body. A subject grasps the dynamometer with one hand while the second finger is at 90°. When the PI says "start," the subject grasps the dynamometer as hard as possible. S/he repeats the process one more time with the other hand and the better record is kept. The dynamometer results are measured in kilograms, recorded to one decimal point.
- Depression  
Depression was measured using the Korean version of the Geriatric Depression Scale-Short Form (GDS-SF) [24]. The GDS-SF Korea version includes 15 items, and each item is answered with yes (1) or no (0), for a total possible range of 0 to 15. Higher scores reflect greater depression, and scores over 5 reflect depression. The reliability of the GDS-SF is 0.88 [24].
- Personal relationships  
To measure personal relationships, the modified Relationship Change Scale (RCS) was used [25]. The original RCS consists of 25 items, and it was modified in Park's (1998) study [26]. The modified RCS includes only 7 items, and each item is answered from 1 (never happened) to 4 (always happens). Higher scores reflect better personal relationships, and the reliability of the RCS is 0.77 [26].

## 2.3. Band Therapy Using Music

Band therapy using music was primarily developed by the PI and the authors based on the results of a literature review [27] [28] [29] [30], and the first draft of band therapy was modified by the nursing faculty. The band therapy method is presented in **Table 1**, and the contents of band therapy consist of an introduction (5 minutes), development (30 minutes), and closing (5 minutes). The introduction includes introduction greetings and warm-up exercises with background music. The development stage includes singing with dance and playing instruments, and the closing stage includes closing speech and stretching with background music. Band therapy was provided by the PI and four research assistants in the activity room of a long-term care facility for 40 minutes at a time, and a total of four sessions (Thursday, once a week).

The music for band therapy changed every week, including "say hi like this," "spring of hometown," "goodbye song," and so on. During the therapy, rhythm instruments, such as a drum, tambourine, triangle, and castanets were used to promote easy use. The PI demonstrated how to use the band and the music instruments. The other authors helped participants with the therapy during each session.

**Table 1.** Band therapy using music.

Session	Composition	Contents	Preparation	Title of song
1	Introduction (5mins)	<ul style="list-style-type: none"> <li>• Introduction &amp; greetings (2 mins)</li> <li>• Warm-up exercise with background music (3 min)</li> </ul>	<ul style="list-style-type: none"> <li>• Vim project tor &amp; PC</li> <li>• Background music with CD player</li> </ul>	Say hi like this
	Singing with dance (15 mins)	<ul style="list-style-type: none"> <li>• Sing a song with clapping alone and together (3 mins)</li> <li>• Sing a song &amp; dancing using band (pulling band alone or with a partner) (15 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Sera band</li> <li>• Background music with CD player</li> </ul>	Spring of home-town
	Development (30mins)	<ul style="list-style-type: none"> <li>• Introduction how to use rhythm musical instrument (5 mins)</li> <li>• Play rhythm musical instrument all together (5 mins)</li> <li>• Play rhythm musical instrument personally (15 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Piano, a base drum, a small drum, tambourine, triangle, castanets</li> </ul>	My pleasant home
	Closing (5mins)	<ul style="list-style-type: none"> <li>• Closing speech (2 mins)</li> <li>• Stretching with background music (good bye song) (3 mins)</li> </ul>		Good bye song
2	Introduction (5mins)	<ul style="list-style-type: none"> <li>• Introduction (2 mins)</li> <li>• Warm-up exercise with background music (3 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Vim projector &amp; PC</li> <li>• Background music with CD player</li> </ul>	Say hi like this
	Singing with dance (20 mins)	<ul style="list-style-type: none"> <li>• Sing a song with clapping alone and together (3 mins)</li> <li>• Sing a song &amp; dancing using band (pulling band alone or with a partner) (17 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Sera band</li> <li>• Background music with CD player</li> </ul>	<i>Gunbam taryeong</i>
	Development (30mins)	<ul style="list-style-type: none"> <li>• Introduction how to use rhythm musical instrument (2 mins)</li> <li>• Play rhythm musical instrument personally (3 mins)</li> <li>• Play rhythm musical instrument all together (5 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Piano, a base drum, a small drum, tambourine, triangle, castanets</li> </ul>	My pleasant home
	Closing (5 mins)	<ul style="list-style-type: none"> <li>• Closing speech (2 mins)</li> <li>• Stretching with background music (good bye song) (3 mins)</li> </ul>		Good bye song
3	Introduction (5 mins)	<ul style="list-style-type: none"> <li>• Introduction &amp; greetings (2 mins)</li> <li>• Warm-up exercise with background music (3 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Vim projector &amp; PC</li> <li>• Background music with CD player</li> </ul>	Say hi like this
	Singing with dance (20 mins)	<ul style="list-style-type: none"> <li>• Sing a song with clapping alone and together (3 mins)</li> <li>• Sing a song &amp; dancing using band (pulling band alone or with a partner) (17 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Sera band</li> <li>• Background music with CD player</li> </ul>	Blossom & blossom
	Development (30 mins)	<ul style="list-style-type: none"> <li>• Introduction how to use rhythm musical instrument (2 mins)</li> <li>• Play rhythm musical instrument all together (8 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Piano, a base drum, a small drum, tambourine, triangle, castanets</li> </ul>	My pleasant home
	Closing (5 mins)	<ul style="list-style-type: none"> <li>• Closing speech (2 mins)</li> <li>• Stretching with background music (good bye song) (3 mins)</li> </ul>		Good bye song
4	Introduction (5mins)	<ul style="list-style-type: none"> <li>• Introduction &amp; greetings (2 mins)</li> <li>• Warm-up exercise with background music (3 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Vim projector &amp; PC</li> <li>• Background music with CD player</li> </ul>	Say hi like this
	Singing with dance (20 mins)	<ul style="list-style-type: none"> <li>• Sing a song with clapping alone and together (3 mins)</li> <li>• Sing a song &amp; dancing using band (pulling band alone or with a partner) (12 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Sera band</li> <li>• Background music with CD player</li> </ul>	Arirang
	Development (30 mins)	<ul style="list-style-type: none"> <li>• Introduction how to use rhythm musical instrument (3 mins)</li> <li>• Play rhythm musical instrument personally (3 mins)</li> <li>• Play rhythm musical instrument all together (12 mins)</li> </ul>	<ul style="list-style-type: none"> <li>• Piano, a base drum, a small drum, tambourine, triangle, castanets</li> </ul>	My pleasant home
	Closing (5 mins)	<ul style="list-style-type: none"> <li>• Closing speech (2 mins)</li> <li>• Stretching with background music (good bye song) (3 mins)</li> </ul>		Good bye song

## 2.4. Data Collection

This study was approved by the Institutional Review Board at K University and the data collection was performed from November to December 2015 after receiving IRB approval. The PI and co-authors visited S-nursing home and first presented the purpose of the study to the director. After the presentation, the director allowed the authors to present the contents of the study to residents of the nursing home. When the presentation was completed and subjects expressed desire to participate, formal written consent was obtained from the subject or his/her legal representatives. After formal consent was obtained, data collection began. The PI explained that the subjects could withdraw from the study at any time. The PI emphasized that the data would be kept in a locked cabinet.

A pretest was conducted right before the first session of the exercise program. The pretest included subject characteristics, grasping power, depression, and personal relationships. After the final session of the program, the posttest, including grasping power, depression, and personal relationships, was conducted. When it was hard for participants to answer the questionnaires, their medical records were used.

## 2.5. Data Analysis

Data analysis was performed using SPSS version 18.0. Descriptive statistics were used to describe participant characteristics, and paired t-tests were used to compare differences in grasping power, depression, and personal relationships between the pretest and posttest.

# 3. Results

## 3.1. Subject Characteristics

General characteristics of participants are presented in **Table 2**. The majority of participants were older than 80 (69.0%), female (90.0%), Christian (60.0%), widowed (76.7%), and had no education (60.0%). Most participants had no family visits (60.0%), low economic status (93.3%), poor health status (70.0%), and engaged in outdoor activity more than 1 hour per day (66.7%). Disease-related characteristics of participants are presented in **Table 3**. The majority of participants had hypertension (63.3%), disease above 5 years (70.0%), and took medications related to hypertension (93.3%). Most participants had poor cognitive status (60.0%) and lived at this nursing home for more than 6 years (56.7%).

## 3.2. Differences in Grasping Power, Depression, and Personal Relationships

Differences in grasping power, depression, and personal relationships are presented in **Table 4**. The mean level of grasping power in the pretest was  $18.13 \pm 9.91$  kg and decreased to  $15.40 \pm 6.45$  kg in the posttest. The difference in grasping power level between pretest and posttest was not significant ( $t = 1.50$ ,  $p = 0.144$ ). The mean level of

depression in the pretest was  $7.45 \pm 3.46$  and decreased to  $6.27 \pm 3.42$  in the posttest. This difference was not significant ( $t = 1.70$ ,  $p = 0.099$ ). The mean personal relationships score in the pre-test was  $19.97 \pm 3.27$ , and this increased to  $20.79 \pm 3.98$  in the posttest. This difference was also not significant ( $t = -0.95$ ,  $p = 0.348$ ).

#### 4. Discussion

The current study investigated the use of band therapy for residents at a long-term care facility and measured its effect on grasping power, depression, and personal relationships. Results showed that grasping power, depression, and personal relationships improved at posttest compared to pretest, but the differences were not statistically significant. Even though the differences were not significant, the current study is meaningful because nursing-home-dwelling elderly have not been studied enough in Korea.

**Table 2.** General characteristics of participants (N = 30).

Characteristics	Categories	n	%
Age (N = 29)	M $\pm$ SD	82.90	5.67
	68 ~ 80	10	33.3
	81 ~ 85	7	24.1
	86 ~ 90	11	37.9
	>90	2	7.0
Gender	Male	3	10.0
	Female	27	90.0
Religion	Christianity	18	60.0
	Buddhism	4	13.3
	None	5	16.7
	Other	3	10.0
Marital status	Widowed	23	76.7
	Not-married	4	13.3
	other	3	10.0
	None	18	60.0
Educationlevel	Elementary	11	36.7
	Middle	1	3.3
Family visiting (a month)	Yes	12	40.0
	No	18	60.0
Economical status	Middle	2	6.7
	Low	28	93.3
Health status	Good	2	6.7
	Fair	7	23.3
	Bad	21	70.0
Total time of a day outdoor activities in (min)	M $\pm$ SD	42.0	42.86
	None	10	33.3
	<1 hr	6	20.0
	1 hr ~ 3 hr	14	46.7



**Table 3.** Disease-related characteristics of participants ( $N = 30$ ).

Characteristics	Categories	n or Mean	% or SD
Diagnosed disease <sup>a</sup>	Hypertension	19	63.3
	Diabetes	8	26.7
	Arthritis	14	46.7
	Dementia	5	16.7
	M $\pm$ SD (month)	137.25	110.38
Total period of illness (n = 26)	$\leq 5$ years	9	30.0
	6 - 10 years	10	33.3
	11 - 20 years	8	26.7
	>20 years	3	10.0
Medication <sup>a</sup>	Hypertension	28	93.3
	Diabetes	5	16.7
	Dementia	15	50.0
	Antipsychotic	9	30.0
	M $\pm$ SD	20.23	7.72
Cognitive status (MMSE)	$\geq 24$	12	40.0
	20 - 23	4	13.3
	0 - 19	14	46.7
	Dianrhea	2	6.7
Discomfort symptom <sup>a</sup>	Constipation	15	50.0
	Thirsty	12	40.0
	Dysuria	9	30.0
	Pain	22	73.3
Marital status	Widowed	23	76.7
	Not-married	4	13.3
	other	3	10.0
	M $\pm$ SD (month)	88.04	69.02
Total period of living facility ( $N = 29$ )	$\leq 5$ years	13	44.8
	6 ~ 10 years	11	36.7
	11 ~ 20 years	6	20.7

<sup>a</sup>Duplicated response.**Table 4.** Differences in grasping power, depression and personal relationship ( $N = 30$ ).

Variable	Pretest (M $\pm$ SD)	Posttest (M $\pm$ SD)	t	p
Grasping power	18.13 $\pm$ 9.91	15.40 $\pm$ 6.45	1.50	0.144
Depression	7.4 $\pm$ 3.46	6.27 $\pm$ 3.42	1.70	0.099
Personal relationship	19.97 $\pm$ 3.27	20.79 $\pm$ 3.98	-0.95	0.348

In the current study, grasp power improved, but the improvement was not significant. In Ponce-Bravo and colleagues' study, grip strength improved in the functional resistance-band exercises group compared to the recreation-oriented exercise group [31]. The band exercise group, comprised of active older adults, completed functional

exercises with elastic bands, aerobics, gross motor activity, action/reaction speed, and floor exercises. In addition, band exercise was provided in 20 sessions over 4 weeks for active older adults in the community, and the intensity of the exercise was modulated according to the expert's perception of each training session. Based on the comparisons, band therapy to improve grasping power needs to include gross motor exercises focused on functional exercises, as well as more planned exercise programs for nursing home elderly. In Kim *et al.*'s (2013) study [32], the Qi-gong exercise and elastic band exercise group improved grip strength in healthy elderly women in the community compared to the no exercise group. Band exercise was provided 3 times/week and included 10 sessions. However, it is difficult for health professionals to provide interventions such as band exercise more than once a week in nursing homes. Thus, band exercise needs to be more intense to improve grip strength among nursing-home-dwelling elderly.

In the current study, depression (7.44) at pre-intervention improved to 6.48 at post-intervention, but it was not statistically significant. In Kim *et al.*'s (2013) study [32], depression at pre-intervention (8.06) improved to 4.93 at post-intervention in the band exercise group, and the difference between the two groups was significant. The lack of a significant difference in depression level in the present study might have resulted from insufficient program duration. Further, nursing home elderly may be at greater risk of depression because of factors such as pain, lack of social contact, and length of stay [33]. Further studies of band therapy should include exercises to improve social contact among nursing-home-dwelling elderly.

During the intervention period, band therapy was provided with music. For the first time, the same music was provided four times in a row, and this may have bored the participants. For future studies, depending on participants' music preferences, a diverse variety of music needs to be provided with the band therapy from the outset. In addition, even participants with poor cognitive function can follow the beat of percussion instruments for the exercise, and so future studies are highly encouraged to use percussion instruments, and it is further encouraged for band therapy to indicate the start and direction of each motion in the exercise.

During the intervention, some participants were very excited to perform the band therapy with music, and they exercised with the band in their own way. On the other hand, other participants sometimes complained that it was difficult to follow the entire process of band therapy. Accordingly, further studies should implement individualized band therapy to meet the cognitive and functional levels of individual participants. Participants also did not prefer fast-paced music for band therapy, instead preferring music with a tolerable speed and familiar lyrics for them to sing and follow along easily. Thus, the contents of band therapy need to be simple and repeated for participants to follow the instructor's demonstration. Also, the current study was performed with only one group so the study needs to be provided with a control group for the further studies.

The current study was performed at one nursing home, and so generalizability is li-

mitted. In this study, band therapy was provided in an experimental group without a control group. For future studies, a control group needs to be provided for the comparison of outcomes between the two groups. In terms of nursing home conditions, band therapy was performed only once a week for a total of four sessions. For effective results, it should be provided more than four times to investigate longer-term effects of the intervention.

## 5. Conclusion

Band therapy improved grip power, depression, and personal relationships, but the effects were not statistically significant. For nursing-home-dwelling elderly individuals, it is possible that band therapy needs to be intense with exercises to improve cognitive and functional status over long periods.

## Acknowledgements

The authors thank all participants and nurses in the nursing-home to help the study completed. This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (No. 2015R1D1A3A01017843).

## References

- [1] National Health Insurance Corporation (2015) 2014 Health Insurance Statistics, Korea.
- [2] Kim, S.M., Lee, H.K. and Sok, S.H. (2009) Activities of Daily Living and Nursing Needs of the Elderly in Nursing Home. *Journal of Korean Academy of Community Health Nursing*, **20**, 1-11. <http://dx.doi.org/10.4040/jkan.2009.39.1.1>
- [3] Jongenelis, K., Pot, A.M., Eisses, A.M.H., Beekman, A.T.F., Kluiters, H. and Ribbe, M.W. (2004) Prevalence and Risk Indicators of Depression in Elderly Nursing Home Patients: The AGED Study. *Journal of Affective Disorders*, **83**, 135-142. <http://dx.doi.org/10.1016/j.jad.2004.06.001>
- [4] Barca, M.L., Engedal, K., Laks, J. and Selbaek, G. (2010) A 12 Months Follow-Up Study of Depression among Nursing-Home Patients in Norway. *Journal of Affective Disorders*, **120**, 141-148. <http://dx.doi.org/10.1016/j.jad.2009.04.028>
- [5] Ha, M.S. and Park, R.J. (2008) A Study of Cognitive Function and Depression of the Elderly in an Institution. *Journal of the Korean Society of Physical Medicine*, **3**, 285-292.
- [6] Ministry and Health Welfare (2014) 2014 Aged Statistics, Korea.
- [7] Park, G.J., Lee, J.H., Bae, K.E., Kang, Y.H. and Song, H.S. (2007) Self-Esteem and Depression of Elders in Welfare Facilities. *Journal of Korean Gerontological Nursing*, **9**, 51-59.
- [8] Levin, C.A., Wei, W., Akincigil, A., Lucas, J.A., Bilder, S. and Crystal, S. (2007) Prevalence and Treatment of Diagnosed Depression among Elderly Nursing Home Residents in Ohio. *Journal of the American Medical Directors Association*, **8**, 585-594. <http://dx.doi.org/10.1016/j.jamda.2007.07.010>
- [9] Yoon, H.J. and Shim, U.B. (2013) The Effects of Grouping Musical Therapy on Old Solitary Women's Depression, Personal Relationship, Satisfaction of Living. *Korean Journal of Welfare Counseling*, **7**, 1-18.
- [10] Ra, H.S. (2006) The Effect of Gestalt Group Arts Therapy on Interpersonal Relationships of

- Client. *Korean Journal of Art Therapy*, **13**, 361-385.
- [11] Park, Y.B. (2002) A Study on the Influential Factors on the Old's Loneliness in Welfare Centers. Unpublished Master's Thesis, Mokwon University, Daejeon.
  - [12] Hatfield, J.P., Hirsch, J.K. and Lyness, J.M. (2013) Functional Impairment, Illness Burden, and Depressive Symptoms in Older Adults: Does Type of Social Relationship Matter? *International Journal of Geriatric Psychiatry*, **28**, 190-198. <http://dx.doi.org/10.1002/gps.3808>
  - [13] Powers, A.D., Gleason, M.E. and Oltmanns, T.F. (2013) Symptoms of Borderline Personality Disorder Predict Interpersonal (But Not Independent) Stressful Life Events in a Community Sample of Older Adults. *Journal of Abnormal Psychology*, **122**, 469-474. <http://dx.doi.org/10.1037/a0032363>
  - [14] Park, E.M. and Lee, M.A. (2006) A Study in the Effects of Group Art Therapy on the Elderly's Human Relationship in the Aged Day Care Center. *Korean Journal of Art Therapy*, **13**, 915-936.
  - [15] Chan, M.F., Wong, Z.Y., Onishi, H. and Thayala, N.V. (2012) Effects of Music on Depression in Older People: A Randomized Controlled Trial. *Journal of Clinical Nursing*, **21**, 776-783. <http://dx.doi.org/10.1111/j.1365-2702.2011.03954.x>
  - [16] Seo, S.Y. and Chang, S.Y. (2009) Effects of Aroma Hand Massage On Sleep, Depression and Quality of Life in the Institutionalized Elderly Women. *Korean Journal of Women Health Nursing*, **15**, 372-380. <http://dx.doi.org/10.4069/kjwhn.2009.15.4.372>
  - [17] Rappe, E. and Kivelä, S.L. (2005) Effects of Garden Visits on Long-Term Care Residents as Related to Depression. *HortTechnology*, **15**, 298-303.
  - [18] Park, S.Y., Kim, J.K. and Lee, S.A. (2015) The Effects of a Community-Centered Muscle Strengthening Exercise Program Using an Elastic Band on the Physical Abilities and Quality of Life of the Rural Elderly. *Journal of Physical Therapy Science*, **27**, 2061-2063. <http://dx.doi.org/10.1589/jpts.27.2061>
  - [19] Lee, H.C., Lee, M.L. and Kim, S.R. (2015) Effect of Exercise Performance by Elderly Women on Balance Ability and Muscle Function. *Journal of Physical Therapy Science*, **27**, 989-992. <http://dx.doi.org/10.1589/jpts.27.989>
  - [20] Chan, S.Y., Kuo, C.C., Chen, K.M., Tseng, W.S., Huang, H.T. and Li, C.H. (2016) Health Promotion Outcomes of a Newly Developed Elastic Band Exercise Program for Older Adults in the Community. *The Journal of Nursing Research*, **24**, 137-144. <http://dx.doi.org/10.1097/jnr.0000000000000099>
  - [21] Nitsure, P.V., Pathania, T.S. and Bilgi, T.A. (2015) Comparison of Elastic Resistance Band Exercises and Yoga in Physiotherapy Students with Chronic Non-Specific Low Back Pain: A Randomized Clinical Trial. *Journal of Yoga & Physical Therapy*, **5**, 180.
  - [22] Yu, W.J., An, C.S. and Kang, H.K. (2013) Effects of Resistance Exercise Using Thera-Band on Balance of Elderly Adults: A Randomized Controlled Trial. *Journal of Physical Therapy Science*, **25**, 1471-1473. <http://dx.doi.org/10.1589/jpts.25.1471>
  - [23] Cohen J. (1998) Statistical Power Analysis for the Behavioral Sciences. 2nd Edition, Lawrence Erlbaum Associates, Mahwah.
  - [24] Kee, B.S. (1996) A Preliminary Study for the Standardization of Geriatric Depression Scale Short Form-Korea Version. *Journal of Korean Neuropsychiatric Association*, **35**, 298-307.
  - [25] Schlein, A. and Guerney, B.G. (1971) Relationship Enhancement. Josey-Bass, San Francisco.
  - [26] Park, H.S. (1998) The Development Mechanism of School Resilience of Korean Adolescents in Poverty. *Korean Journal of Youth Studies*, **5**, 147-165.
  - [27] Kim, S.M., Lee, Y.J. and Kim, H.J. (2009) Effect of Resistance Training on Joint Flexibility

- and Muscle Strength of Upper Extremities of Elderly with Impaired Cognition. *Journal of the Korean Gerontological Society*, **29**, 987-1000.
- [28] Jeon, E.Y., Kim, S.Y. and Yoo, H.S. (2009) Effects of Music Therapy and Rhythmic Exercise on Quality of Life, Blood Pressure and Upper Extremity Muscle Strength in Institution-Dwelling Elderly Women. *Journal of Korean Academy of Nursing*, **39**, 829-839. <http://dx.doi.org/10.4040/jkan.2009.39.6.829>
- [29] Seo, K.H. (2010) The Effect of Therapeutic Music Activities Using the Call & Response Singing Form on the Reduction of Loneliness and the Improvement of Interpersonal Relations of the Senior Citizen Living at a Nursing Home. *Korean Journal of Music Therapy*, **12**, 19-38.
- [30] Choi, A.N., Kim, Y.H. and Cheung, K.J. (2010) A Study on the Effects of Music Therapy Activity on Day-Care Elders Cognitive Function and Depression. *Journal of Arts Psychotherapy*, **6**, 103-121.
- [31] Ponce-Bravo, H., Ponce, C., Feriche, B. and Padial, P. (2015) Influence of Two Different Exercise Programs on Physical Fitness and Cognitive Performance in Active Older Adults: Functional Resistance-Band Exercises vs. Recreational Oriented Exercises. *Journal of Sports Science & Medicine*, **14**, 716-722.
- [32] Kim, Y.S., Kim G.C., Lee J.W., Kim C.T., Oh, M.J. and Kwak Y.S. (2013) The Effects of Qi-Gong Exercise and Elastic Band Exercise on Fitness, ADL and Depression in Elderly Women. *Journal of Wellness*, **8**, 293-302.
- [33] Tiong, W.W., Yap, P., Huat Koh, G.C., Phoon Fong, N. and Luo, N. (2013) Prevalence and Risk Factors of Depression in the Elderly Nursing Home Residents in Singapore. *Aging & Mental Health*, **17**, 724-731. <http://dx.doi.org/10.1080/13607863.2013.775638>



Scientific Research Publishing

**Submit or recommend next manuscript to SCIRP and we will provide best service for you:**

Accepting pre-submission inquiries through Email, Facebook, LinkedIn, Twitter, etc.

A wide selection of journals (inclusive of 9 subjects, more than 200 journals)

Providing 24-hour high-quality service

User-friendly online submission system

Fair and swift peer-review system

Efficient typesetting and proofreading procedure

Display of the result of downloads and visits, as well as the number of cited articles

Maximum dissemination of your research work

Submit your manuscript at: <http://papersubmission.scirp.org/>

Or contact [ojn@scirp.org](mailto:ojn@scirp.org)



*Call for Papers*



# Open Journal of Nursing (OJN)

ISSN 2162-5336 (Print) ISSN 2162-5344 (Online)

<http://www.scirp.org/journal/ojn>

*Open Journal of Nursing (OJN)* is an international peer-reviewed, open access journal publishing in English original research studies, reviews and case reports in nursing. Symposia or workshop papers may be published as supplements.

## Editorial Board

**Prof. Lora L. H. Beebe**

**Prof. Shu-Li Chen**

**Dr. Rie Chiba**

**Dr. Rose E. Constantino**

**Prof. Lucille Sanzero Eller**

**Prof. Ganga Mahat**

**Dr. Donna Felber Neff**

**Prof. Patricia Newcomb**

**Dr. Sheila O'Keefe-McCarthy**

**Dr. Solina Richter**

**Prof. Donna M. Wilson**

University of Tennessee, USA

South College, USA

Jichi Medical University, Japan

University of Pittsburgh, USA

The State University of New Jersey, USA

The State University of New Jersey, USA

College of Nursing University of Florida, USA

University of Texas at Arlington, USA

Trent University, Canada

University of Alberta, Canada

University of Alberta, Canada

We are also interested in: 1) Short Reports—2-5 page papers where an author can either present an idea with theoretical background but has not yet completed the research needed for a complete paper or preliminary data; 2) Book Reviews—Comments and critiques.

## Notes for Prospective Authors

Submitted papers should not have been previously published nor be currently under consideration for publication elsewhere. All papers are refereed through a peer review process. For more details about the submissions, please access the website.

## Website and E-Mail

<http://www.scirp.org/journal/ojn>

E-Mail: [ojn@scirp.org](mailto:ojn@scirp.org)



## What is SCIRP?

Scientific Research Publishing (SCIRP) is one of the largest Open Access journal publishers. It is currently publishing more than 200 open access, online, peer-reviewed journals covering a wide range of academic disciplines. SCIRP serves the worldwide academic communities and contributes to the progress and application of science with its publication.

## What is Open Access?

All original research papers published by SCIRP are made freely and permanently accessible online immediately upon publication. To be able to provide open access journals, SCIRP defrays operation costs from authors and subscription charges only for its printed version. Open access publishing allows an immediate, worldwide, barrier-free, open access to the full text of research papers, which is in the best interests of the scientific community.

- High visibility for maximum global exposure with open access publishing model
- Rigorous peer review of research papers
- Prompt faster publication with less cost
- Guaranteed targeted, multidisciplinary audience



**Website: <http://www.scirp.org>**  
**Subscription: [sub@scirp.org](mailto:sub@scirp.org)**  
**Advertisement: [service@scirp.org](mailto:service@scirp.org)**