ISSN 1695-6141
Revista electrónica trimestral de Enfermería
Nº56
Octubre 2019
www.um.es/eglobal/

ORIGINALES

Young adult's knowledge about stroke in a Portuguese south town

Conhecimentos de adultos jovens sobre o acidente vascular cerebral numa cidade ao sul de Portugal

Conocimiento de adultos jóvenes sobre el accidente cerebrovascular en una ciudad del sur de Portugal

Maria Margarida Santana Fialho Sim-Sim[1]
Maria José Abrantes[1]
Maria Gorete Mendonça dos Reis[1]
Elsa Maria Garção Pires[2]
Manuel Agostinho Matos Fernandes[1]
Maria da Luz Ferreira Barros[1]

[1] Universidade de Évora. Portugal. msimsim@uevora.pt
[2] Hospital do Espírito Santo EPE de Évora. Portugal.

http://dx.doi.org/10.6018/eglobal.18.4.356061

Received: 28/12/2018
Accepted: 15/02/2019

ABSTRACT:

Aim: To analyze the knowledge of young adults about stroke.
Method: Quantitative, cross-sectional study in a non-clinical environment. Convenience simple. Through the elementary school of Evora, parental figures were asked to participate. Ethical aspects were respected. Self-fill questionnaire returned after one week.
Results: 147 men (44.5%) participated, 183 women (55.5%), with a mean age of 42.25 years (SD = 5.00). The most commonly reported risk behavior for stroke is smoking (56.5%), followed by hypertension (28.8%) and hypercholesterolemia (28.8%). The main sources of information are television (93.2%) and friends (89.4%). In immediate witness assistance, the attitudes of the participants would be mostly incorrect. There is a gap between knowledge and the respective action.
Conclusions: there is a risk behavior, observed also among other studies, with a population of older people. The results show a lack of literacy in health. It will be urgent to develop projects that inform and exemplify the risks of behavior. The performance of the person with stroke must be taught and trained to the citizen. The dissemination of information about stroke is urgent in the region. Young adults, as educators, can intervene to reduce cases in the generation of their children.

Keywords: knowledge; stroke; risk factors; Attitude.

RESUMO:

Objetivo: Analisar o conhecimento de jovens adultos sobre o AVC.
Método: Estudo quantitativo, transversal, em ambiente não clínico. Amostra de conveniência de adultos. Através das crianças das escolas da cidade de Évora, foi solicitada a participação das figuras parentais. Os aspetos éticos foram respeitados. Questionário de auto-preenchimento com retorno após uma semana.

Resultados: Participaram 147 homens (44,5%), 183 mulheres (55,5%), com idade média de 42,25 anos (DP = 5,00). O comportamento de risco mais referido ao acidente vascular cerebral é o tabagismo (56,5%), seguido da hipertensão (28,8%) e hipercolesterolemia (28,8%). As principais fontes de informação são televisão (93,2%) e amigos (89,4%). Na ajuda imediata das vitimas, as atitudes dos participantes seriam em sua maioria incorretas, existindo uma lacuna entre o conhecimento e o respetivo desempenho.
Conclusões: Existem comportamentos de risco entre os participantes, que são observados em outros estudos, mas com população de idosos. Os resultados detetam carência na literacia em saúde. Será urgente o desenvolvimento de projetos que informem e exemplifiquem os riscos dos comportamentos. A ação perante a pessoa vítima de acidente vascular cerebral, deve ser objeto de educação e treino do cidadão. A informação sobre a temática é urgente na região. Jovens adultos, como educadores, pode intervir para reduzir os casos na geração dos filhos.

Palavras-chave: conhecimento; acidente vascular cerebral, fatores de risco.

RESUMEN:
Objetivo: Analizar el conocimiento de adultos jóvenes sobre el accidente cerebrovascular.
Métodos: Estudio cuantitativo, transversal, en ambiente no-clínico. Muestra de conveniencia de adultos. A través de los niños de las escuelas de la ciudad de Évora, se pidió la participación de las figuras parentales. Los aspectos éticos fueron respetados. Cuestionario de auto rellenado devuelto pasado una semana.
Resultados: Participaron 147 hombres (44.5%), 183 mujeres (55.5%), con la edad media de 42.25 años (DP=5.00). El comportamiento de riesgo más referido para el accidente cerebrovascular es el tabaquismo (56.5%), siguiéndo la hipertensión (28.8%) y la hipercolesterolemia (28.8%). Las principales fuentes de información son la televisión (93,2%) y los amigos (89,4%). En la ayuda inmediata, las actitudes de los participantes serían en la mayoría incorrectas, existiendo un desfase entre el conocimiento y la respectiva actuación.
Conclusiones: Existen entre los participantes comportamientos de riesgo observados en otros estudios con población de personas mayores. Los resultados detectan déficit de alfabetización en salud. Será urgente el desarrollo de proyectos que informen y ejemplifiquen, los riesgos de los comportamientos. La actuación ante la persona con accidente cerebrovascular, debe ser objeto de enseñanza y de entrenamiento al ciudadano. La divulgación de información sobre accidente cerebrovascular es urgente en la región. Los adultos jóvenes, como educadores, pueden intervenir para disminuir los casos en la generación de sus hijos.

Palabras Clave: conocimiento; accidente cerebrovascular; factores de riesgo.

INTRODUCTION

Cerebrovascular diseases are dysfunctions that temporarily or permanently affect blood flow. They contribute to mortality in the world, this disease, cerebrovascular accident (CVA), has been the second cause of death for 16 years [(1)]. For some decades and in different places, nurses have considered this pathology an important subject for research [(2)]. The non-modifiable risk factors refer to the progression of age or genetic patrimony. CVA in age context has varied expressions on immediate and future damages for the individual.

It is reported as uncommon in young adults (i.e., 10-15%) the age range 45-49 years-old still register differences in incidence that vary between 5% and 20%[(3)] However, in young adults, mortality is high and morbidity is associated with distress due to the consequences they face in the most productive phase of life [(3-5)]. In women, the specific factors related to pregnancy, puerperium and the use of contraceptives or pre-climacterics increase the risk [(5, 6)]. Considering the genetics linked to ethnic factors, the greatest risks are found in non-Hispanic black women versus minor risks in Caucasian women [(6)]. If up to 35-44 years-old men have a higher prevalence, regarding the range 45-54 years-old, it becomes higher in women [(4)].

Modifiable factors, on the other hand, manifest themselves in multiple ways in unhealthy behaviours, which reflect the level of education [6]. Hypertension, diabetes, smoking, obesity, dyslipidaemias and inactivity can be highlighted. Other abusive behaviours such as alcohol, salt, sugar can potentiate the previous ones [5,7,8]. Other aspects, such as socioeconomic position affect some modifiable factors, showing an inverse association with the incidence and mortality of stroke [9, 10]. In Portugal, CVA is also the second leading cause of death. But in the South, in the Alentejo region, the situation is more serious, both in terms of mortality (57.2 / 100,000 inhabitants) and morbidity [11]. In the Alentejo, smoking shows higher values in any age group [12] compared to the data of the country. With regard to excess weight, it is less frequent compared to other regions, but the prevalence of hypertension and diabetes is the highest in the country [13-16].

Recognising immediately CVA, quick medical aid and moving a person to a health unit in a period of time not exceeding 3 hours can lead to a different outcome to the problem. In Portugal, the Directorate General of Health (DGS Portuguese acronym) considers health education relevant, which includes how population can recognise warning signs of threatening situations, as well as the activation Via Pre-hospital CVA *Vía Verde* pathway. The CVA Via Verde is an organised strategy to care patients with suspected stroke in progress. It is regulated by the DGS. The health emergency number (112) activates the CVA Vía Verde that sends the means and transfers the person to the nearest hospital that has a CVA Unit since early care can reverse an ongoing stroke.

Apart from the resources related to health services and the immediate care provided by witnesses, patient's recognition of stroke signs or symptoms is essential. Knowledge about such a question can be acquired through educational programs. Some studies show that, in risk groups, the information provided remains for almost five years [17]. Programs focused on specific groups are more effective. The design depends on risk factors, the context and the own methodology.

In the Alentejo, knowledge about stroke in young adults has not been studied. There is no standard reference that shows a global understanding of citizens' preparedness to avoid or intervene in a CVA situation, nor are information needs identified. If there were knowledge, conditions to make the most appropriate decisions in a short period of time could be created. Considering the position that young adults have between the generations of their parents and their children, the present study is carried out with the aim of analysing their knowledge about the signs and symptoms, as well as the promptness of first aid before an episode of stroke.

METHODOLOGY

Quantitative, cross-sectional descriptive study. The participants are a sample of adult citizens. The collection of the sample was obtained from the parents of children who are enrolled in basic education. The proposed inclusion criteria were: living in the city of Évora, being less than 60 years old. Parental figures that do not live in the same house as the child were excluded.

This group was selected since these parents belong to young adults' age group and 3 generations (children, parents and grandparents) live simultaneously in the family. Out of a total of 607 children, 1214 parental figures were estimated. Applying Krejce and

Morgan criteria [18], 300 subjects were estimated. In order to compensate losses, an additional 20% of the 360 questionnaires were distributed. 338 were fully completed. Eight grandparents who are in charge of education were removed from the study. The study includes 330 participants.

The survey is composed of four sections: a) sociodemographic variables (age, gender, level of education, b) knowledge variables about stroke (ie, signs, symptoms, conditions and associated pathologies), c) CVA risk variables identified by participants (ie, diabetes, hypertension, obesity, hypercholesterolemia, heart disease, smoking) and d) variables of CVA signs (ie, Cincinnati pictogram) and first aid options for a person with suspected CVA

Based on the risk knowledge variables, the list of possible causing diseases and the signs, the main variable was determined: Knowledge about stroke based on previous studies [19, 20]. The rating of the main variable varied from 0 to 30 points. It was obtained through the sum, considering the correct statements in the 30 questions.

The IBM-SPSS®, version 22 was used for data analysis. Descriptive statistics were applied to characterize the sample. Due to the non-normal distribution in the main variable (K-S=.123; df=330; p=.000) non-parametric tests are used.

The project was sent to the Centre for Research in Health Sciences and Technologies of the University of Évora (CICTS Portuguese acronym), obtaining a positive opinion from the Ethics Commission of the University (i.e., record nº49278, review nº15043). In addition, a permission from the Regional Office of Education of the Alentejo, was obtained to access schools. Collaboration from teachers was requested to contact the parental figures and for the distribution of questionnaires. The questionnaire was delivered, in opaque and closed envelope to the participants and the respective written consent was requested, with guarantee of anonymity and confidentiality. After two weeks, all the questionnaires were completed.

RESULTS

147 men (44.5%), 183 women (55.5%), aged between 30 and 55 years old (M=42.25; DP=5.00) participated, however 15 people did not mention their age. Considering the 170 participants who recognize in themselves risk factors, through the analysis of multiple responses, it is observed that there are 243 references to risk factors. Smoking, hypertension and hypercholesterolemia are the most common ones (Table 1).

Table 1 – Recognizing in themselves practices or organic risk conditions for CVA

	Answers		
	N	Percentage	Percentage of Cases
Diabetes	8	3,3%	4,7%
Hypertension	49	20,2%	28,8%
Obesity	34	14,0%	20,0%
Hypercholesterolemia	49	20,2%	28,8%
Heart Disease	7	2,9%	4,1%
Smoking	96	39,5%	56,5%
Total	243	100,0%	142,9%

When we analyse separately men and women, it is observed that smoking is the most common reference for both sexes. Secondly, the highest perceived risk for men is hypertension (mentioned 32 times, 25.4% male), however, for women hypercholesterolemia is the reference (mentioned 32 times, 27.4% female).

Regarding the 96 smokers, the daily consumption varies between 2 and 40 cigarettes, with a mean of 10 (n = 22, 23.4%). In reference to hypertension, there are 41 (12.9%) participants who take therapeutics, aged between 31 and 50 years-old (M = 44.38, DP = 4.28).

Almost all participants have already heard about stroke (n = 324, 99.1%). The sources from which they obtained information are shown in table 2, highlighting television and friends. The family is the second less frequent source of information.

Table 2 - Sources of information on CVA theme

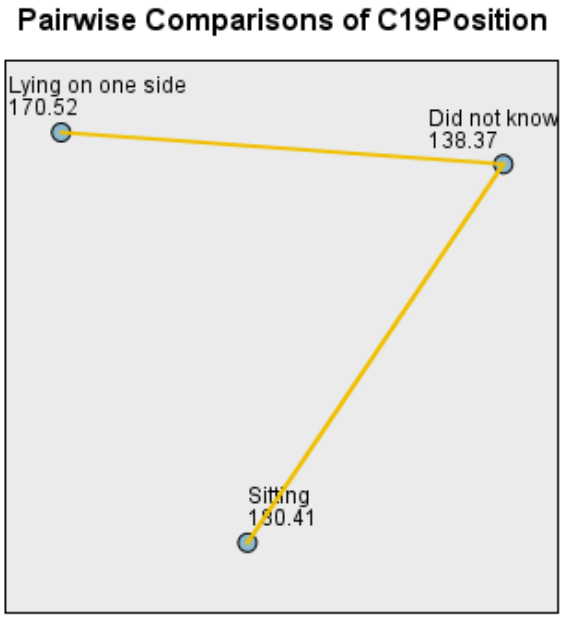
	Yes (%)	**No %**
Television	302 (93.2%)	22 (6.8)
Friends	277 (89.4%)	33 (10.6%)
School	145 (49.8%)	146 (50.2%)
Consultation/Hospital	191 (64.3%)	106 (35.7%)
Famíly	161 (53.5%)	140 (46.5%)

For most people (n=309; 94,5%), stroke can be prevented, but cannot be cured (n=189; 58.3%). Most participants consider that health services provide little information about stroke (n=207; 64.7%).

The main variable shows a level of knowledge about stroke, which varies between 16 and 30 points, with a mean of 23.55 (DP=2,58). There is no significant difference between men and women (U=13522.50; N_{Mas}=147; N_{Fem}=183; p=.933)

With regard to knowledge about stroke, specifically in relation to the position in which the patient should be placed (sitting, lying on one side, did not know what to do), the comparison by pairs shows that participants who would position patient on his/ her side have a higher level of knowledge. That is, through a Kruskall-Wallis test, significant differences in knowledge are verified, in at least one of the groups ($H_{(2)}$=8.406; p=.015). In the multiple comparisons of Dunn's test, it can be seen that participants who did not know what to do had significantly lower ratings comparatively to the participants who laid the victim on a lateral position or who sat her down. However, on average, the order of the knowledge of those who would seat the victim is superior compared to those who would choose the lateral decubitus position (figure 1).

Figure 1: Multiple comparisons of Dunn's test for the variable of participants' knowledge based on the resolution of victim's position



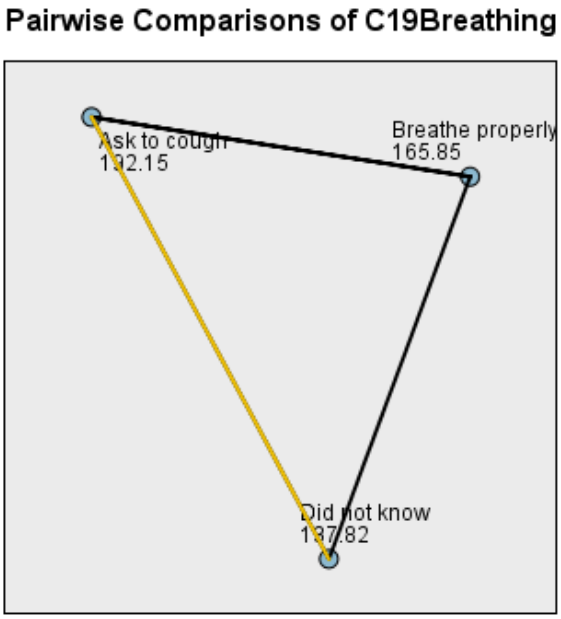
Each node shows the sample average rank of C19Position.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Did not know-Lying on one side	32.150	13.039	2.466	.014	.041
Did not know-Sitting	42.039	15.613	2.693	.007	.021
Lying on one side-Sitting	-9.889	13.102	-.755	.450	1.000

Each row tests the null hypothesis that the Sample 1 and Sample 2 are the same
Asymptotic significance (2-side tests) are displayed. The significance level is .05. Significance values have been adjusted by the Bonferroni correction in multiple tests.

Once having carried out the analysis of the knowledge in the care related to breathing, it is verified through Kruskall-Wallis test that there are significant differences ($H_{(2)}$=11.287; p=.004). In the multiple comparisons of Dunn's test, participants who did not know what to do presented a significantly lower rating of knowledge than those who asked patient to cough (figure 2).

Figure 2: Multiple comparisons of Dunn's test for the variable of participants' knowledge based on the resolution of victim's ventilation



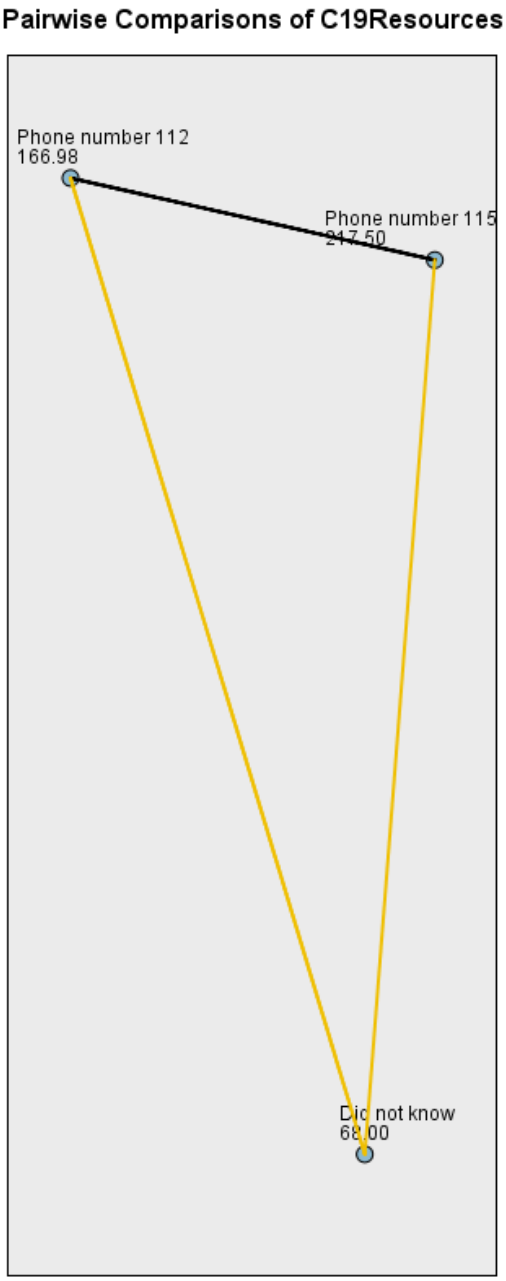
Each node shows the sample average rank of C19Breathing.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Did not know-Breathe properly	28.028	13.098	2.140	.032	.097
Did not know-Ask to cough	54.330	16.199	3.354	.001	.002
Breathe properly-Ask to cough	-26.302	13.533	-1.944	.052	.156

Each row tests the null hypothesis that the Sample 1 and Sample 2 are the same
Asymptotic significance (2-side tests) are displayed. The significance level is .05. Significance values have been adjusted by the Bonferroni correction in multiple tests.

Through a Kruskal-Wallis test for independent samples, it was observed that there were significant differences in relation to the level of knowledge of the participants ($H_{(2)}$=10.378; p=.006), when the three groups of options are considered (ie, call the emergency number, call 115, do not know what to do). In fact, the people who would call 115 (old emergency number), are those who have higher knowledge. In the multiple comparisons of Dunn's test, participants who did not know what to do show a significantly lower knowledge than the groups that would call 115 or 112. However, the average order of knowledge of participants who would call 112 is lower than those who would call 115 (Figure 3).

Figure 3: Multiple comparisons of Dunn's test for the variable of participants' knowledge based on the resolution to call emergency phone number.



Each node shows the sample average rank of C19Resources.

Sample1-Sample2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj.Sig.
Did not know-Phone number 112	98.981	33.884	2.921	.003	.010
Did not know-Phone number 115	149.500	51.116	2.925	.003	.010
Phone number 112-Phone number 115	50.519	39.005	1.295	.195	.586

Each row tests the null hypothesis that the Sample 1 and Sample 2 are the same
Asymptotic significance (2-side tests) are displayed. The significance level is .05. Significance values have been adjusted by the Bonferroni correction in multiple tests

DISCUSSION

As young adults, it is relevant that more than half identify themselves as being at risk of stroke. This is in line with the authors who support the growing trend of this pathology in this age group [5]. Fortunately, there is a low perception of susceptibility. Some harmful behaviours, such as smoking, are frequently acquired in adolescence and it is difficult to quit them. In fact, smokers have from 2 to 4 times the risk of having stroke throughout their lives, than non-smokers or ex-smokers for more than 10 years [21].

Hypertension, as the second risk factor and the most frequently mentioned one by men, was an option to be expected, in line with previous studies [2,8].The data are consistent with the reports of the DGS concerning the Alentejo region [8]. No less important as a risk factor is hypercholesterolemia, with a higher tendency in females, confirming local data [22]. The results described above suggest that the risk in participants is high since the factors are prevalent at around 53-60 years-old [17]. The similarity between the profiles of participants in relation to the data from other studies shows the likelihood of an increased risk in young local adults. As in other studies, regional risk variations should be the aim of urgent intervention programs [23]. De facto, the risks are not isolated, they occur simultaneously, and can be aggravated or enhanced.

In controversy to risk behaviours, knowledge about CVA is high. The intensity of the television message seems to contribute to this knowledge. The accessibility to television allows the emission-reception of intense messages favouring their assimilation [20]. Likewise, despite knowledge about stroke, the presence of risk behaviours shows evidence of underestimation. These results are linked to the review study, in which we can find mixed results of the effectiveness of educational interventions, with variations according to the different factors [24]. The possibility of treatment of CVA is unknown by most of participants, fact indicated above [20], but the possibility of cure may incite the need to learn how to assist people with stroke in progress. In the present study, there is some lack of knowledge about what to do, since there are participants who could not place the patient to prevent airway obstruction, would not evaluate the breathing condition or call the emergency number 112.

These facts predispose to the incapacity of the patient, which could be avoided, if he/she were taken to stroke urgent medical care. The individuals who are more aware of the pathology, on the other hand, would perform the assistance and first aid, but with not recommendable attitudes (i.e., sitting the victim, asking victim to cough). These aspects, increased by calling the wrong telephone number, would result in ineffective help. Curiously, participants who have intermediate knowledge would act more adequately regarding posture, ventilation and telephone contact [25].

The results suggest that information is important and urgent. They reveal that the knowledge of safe acting should be taught. In addition, training adults is urgent, due to its impact on mortality and morbidity associated with stroke. In fact, education programs on signs and symptoms of stroke and pre-hospital care are effective. Prompt recognition is important as well as rushing to the hospital with adequate manipulation of the patient [2, 26]

Some limitations of the present study are due to the type of sample with no possibility of obtaining general results. The unique moment of data collection prevents the follow-up of participants. The use of standardized measures is also a weakness of the present study, recognised in literature review [24, 27]. Suggestions. It would be useful to carry out larger studies on risk factors of cardio-vascular pathologies. The development of an educational program, with consecutive evaluations, before and after, that would allow the acquisition of knowledge and skills training. The establishment of partnerships between School and health units can materialise these ideas into useful projects for the community.

CONCLUSION

From these results, it can be deduced that there is a gap between health preservation behaviours and the level of knowledge about stroke. Two major needs in the population emerge, one in reference to the need to raise awareness about the balance between behaviour and risk and another about the ability to act safely and effectively when a person is having a stroke. Patients and health professionals can contribute with effective strategies to promote healthy behaviours Commemorative days, health fairs are examples of events where behaviour to improve the management of quality of life can be discussed.

REFERENCES

1. WHO. The top 10 causes of death 2010-2016 Geneve: World Health Organization; 2018 [Available from: http://www.who.int/en/news-room/fact-sheets/detail/the-top-10-causes-of-death.
2. Cometto MC. Manejo de enfermeira en el acidente cérebro vascular inicial. Enfermería Global [Internet]. 2005; 7:[16 p.]. Available from: https://revistas.um.es/eglobal/article/view/479/463.
3. Smajlović D. Strokes in young adults: epidemiology and prevention. Vascular Health and Risk Management. 2015;11:157-64.
4. Singhal AB, Biller J, Elkind MS, Fullerton HJ, Jauch EC, Kittner SJ, et al. Recognition and management of stroke in young adults and adolescents. Neurology. 2013;81(12):1089-97.
5. Ekker MS, Boot EM, Singhal AB, Tan KS, Debette S, Tuladhar AM, et al. Epidemiology, aetiology, and management of ischaemic stroke in young adults. Lancet Neurol. 2018;17(9):790-801.
6. Benjamin EJ, Virani SS, Callaway CW, Chamberlain AM, Chang AR, Cheng S, et al. Heart Disease and Stroke Statistics-2018 Update: A Report From the American Heart Association. Circulation. 2018;137(12):e67-e492.
7. WHO. Global status report on noncommunicable diseases 2014. Geneva: World Health Organization; 2014. 302 p.
8. Macedo M, Ferreira R. A hipertensão arterial nos cuidados de saúde primarios em Portugal: contributo para o conhecimento epidemiológico da população em 2013. Revista Factores de Risco. 2015;36:47-56.
9. Cabral NL, Longo A, Moro C, Ferst P, Oliveira FA, Vieira CV, et al. Education level explains differences in stroke incidence among city districts in Joinville, Brazil: a three-year population-based study. Neuroepidemiology. 2011;36(4):258-64.
10. Ahacic K, Trygged S, Kåreholt I. Income and education as predictors of stroke mortality after the survival of a first stroke. Stroke Res Treat. 2012;2012:983145.

11. DGS. Portugal. Prevenção e controlo do tabagismo em números - 2013. Lisboa: Direção Geral de Saúde; 2013. 152 p.
12. Ministerio da Saúde. Caraterísticas sociodemograficas dos fumadores diários em Portugal Continental: análise comparativa dos Inquéritos Nacionais de Saúde. Lisboa: Instituto Nacional de Saúde Doutor Ricardo Jorge; 2017.
13. Macedo MEd, Lima MJ, Silva AO, Alcântara P, Ramalhinho V, Carmona J. Prevalência, Conhecimento, Tratamento e Controlo da Hipertensão em Portugal. Estudo PAP [2]. Rev Port Cardiol [Internet]. 2007 07 oct 2018; (26):[21-39 pp.]. Available from: https://s3.amazonaws.com/academia.edu.documents/44934125/787.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1538907305&Signature=ceTB8NcgpfDXp9cVVy8FkIW%2BCkE%3D&response-content-disposition=inline%3B%20filename%3DPrevalencia_conhecimento_tratamento_e_co.pdf.
14. Sousa-Uva M, Dias CM. Prevalência de Acidente Vascular Cerebral na população portuguesa: dados da amostra ECOS 2013. Boletim Epidemiológico [Internet]. 2014 07 Oct 2018; (4):[12.4 p.]. Available from: http://repositorio.insa.pt/bitstream/10400.18/2341/3/Boletim_Epidemiologico_Observacoes_9_2014_artigo4.pdf.
15. DGS. Programa Nacional para a Diabetes 2017. Saúde DGd, editor. Lisboa2017. 20 p.
16. Ministerio da Saúde. Retrato da Saúde - Portugal. Lisboa: Serviço Nacional de Saúde; 2018.
17. Metias MM, Eisenberg N, Clemente MD, Wooster EM, Dueck AD, Wooster DL, et al. Public health campaigns and their effect on stroke knowledge in a high-risk urban population: A five-year study. Vascular. 2017:1708538117691879.
18. Almeida L, Freire T. Metodologia da Investigação em Psicologia e Educação. 5ª ed. Lisboa: Psiquilíbrios; 2017.
19. Coelho R, Freitas W, Campos G, Teixeira R. Stroke awareness among cardiovascular disease patients. Arquivos de Neuro-Psiquiatria. 2008;66:209-12.
20. Bule MJ, Sim-Sim M, Correia IMTB, Falé MJM. Population's Knowledge about cerebrovascular accident (STROKE) – passers of the square Giraldo in Évora. Journal of Nursing UFPE on line [Internet]. 2016; 10(1):[65-72 pp.]. Available from: http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/7709.
21. Shah RS, Cole JW. Smoking and stroke: the more you smoke the more you stroke. Expert review of cardiovascular therapy. 2010;8(7):917-32.
22. Ferreira R, Neves R. Portugal – Doenças Cérebro-Cardiovasculares em números – 2015. Lisboa: Direção Geral de Saúde; 2016.
23. O'Donnell MJ, Chin SL, Rangarajan S, Xavier D, Liu L, Zhang H, et al. Global and regional eff ects of potentially modifi able risk factors associated with acute stroke in 32 countries (INTERSTROKE): a case-control study. The Lancet [Internet]. 2016 08 july 2017; 388(10046):[761-75 pp.].
24. Bridgwood B, Lager KE, Mistri AK, Khunti K, Wilson AD, Modi P. Interventions for improving modifiable risk factor control in the secondary prevention of stroke. Cochrane Database Syst Rev. 2018;5:Cd009103.
25. SNS-INEM. Gestos que salvam- Posição lateral de segurança: SNS; 2017 [Available from: http://www.inem.pt/category/cidadaos/gestos-que-salvam/.
26. Yang L, Zhao Q, Zhu X, Shen X, Zhu Y, Yang L, et al. Effect of a comprehensive health education program on pre- hospital delay intentions in high-risk stroke population and caregivers. Quality of Life Research [Internet]. 2017 09 july 2017. Available from: http://link.springer.com.ololo.sci-hub.cc/article/10.1007%2Fs11136-017-1550-4.

27. Lager KE, Mistri AK, Khunti K, Haunton VJ, Sett AK, Wilson AD. Interventions for improving modifiable risk factor control in the secondary prevention of stroke. Cochrane Database Syst Rev. 2014(5):Cd009103.

ISSN 1695-6141