

Accessibility to Healthcare for Stroke: Concept Analysis

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Abstract— Individual with disabilities means, person who have limitation for physical, mind, cognitive and sensory impairments which make lost participation in social and community Accessibility subject are an outcome, equipment, service, or environment which needed and demanded for persons with disabilities, or human with functional limitations. Hence, it's necessary to observe the accessibility which people who have limitations or disabilities to the primary public services needed. Methodology for clear this concept is utilized 8 steps of Walker and Avant strategies on concept analysis. Related with this, the author mentions the fourth of attributes for accessibility to healthcare, such as: availability healthcare, knowledge, healthcare cost, health services, healthcare workforce, and safety. Finally, this concept becomes one of important concept for holistic of nursing care and prevent miscomprehension.

Keywords— Accessibility, healthcare, nursing.

I. INTRODUCTION

The incidence rate for new stroke from 1990-2006 is over 13.7 million, and one's from fourth people which upper 25 years old having risk for new cases during spend a lifetime, in the U.S.A., this case support for mortality rate on 1 of 3 deaths [1] [2]. On another hand, more than 80 million people, recovery from stroke attack, and become a number of DALYs (Disabilities Adjusted-Life Years), because of that, must concern with several modified risk for stroke without comparing from high, middle and low-income countries [3] [4].

Individual with disabilities means, person who have limitation for physical, mind, cognitive and sensory impairments which make lost participation in social and community [5]. Non-Communicable Diseases (NCDs) is one of the largest cause of disabilities in the world. Worldwide expose if each year, 44 million people become disabled as an impact for stroke [6]. Another data showed if, in the US, disability for stroke survivors is the highest problem, and its impact for depending on the caregiver of a stroke survivor [7]. Moreover, if stroke survivors without disabilities, they are still needed for helping by caregivers which informal or formal

caregivers to lifelong and it can be another burden related to human life and economic cost [8].

One of continent which contributed 60% for the demographic population in the world is Asia. On factual, the stroke becomes one of majority problems in there, 75.2% for stroke case, with 81% for DALYs related to this, Asian case of stroke become one of the global burdens which Indonesia is the highest of stroke population in South of Asia [9]. Indonesia having 260 million of the population in which 37% mortality case is caused by CVD with a stroke is leading followed coronary heart disease and diabetes [10].

Related with stroke survivor data in Indonesia, the first is an area, which prevalence 31.6% living on an urban area, 28.7% in semi-urban, and 26.2% stay on rural areas, which the highest age risk for 40 years old and upper. The province with the highest cases in East Kalimantan (14.7 per mile) and the lowest in Papua (4.1 per mile). This impact on health expenditure, from 2016 to 2018, the BPJS (government insurance) noted that the cost of health services for stroke continues to increase. In 2016 is 1.43 trillion rupiahs, and reach 2.56 trillion rupiah in 2018 and it becomes the higher per capita of Indonesian expenditure [11–13].

In Indonesia we have act and policy for support health, such as Act No. 36 of 2009 for equality health service, in the MoH National Strategic Plan for Universal Health Coverage for Indonesian peoples, and six Indonesia health systems [14].

Furthermore, the government was to support for an Indonesian health system, such as; community engagement program called Pos Pelayan Terpadu (Posbindu), Vigilant Village (Desa Siaga), The National Hospital Accreditation Agency (KARS), social insurance with merged into the single-payer Universal Health Coverage model called JKN (Jaminan Kesehatan Nasional) by Badan Penyelenggara Jaminan Sosial Kesehatan (BPJS), The Indonesian Medical Council (KKI), National formulary as the basis for medicine, and BLUD, the law of financial autonomy [10] [14].

Also, based on the explanation above, accessibility subject is outcome, equipment, service, or environment which needed

and demanded for persons with disabilities, or human with functional limitations. Hence, it's necessary to observe the accessibility which people who have limitations or disabilities to the primary public services needed. Besides, the concept of accessibility depended on complexity and context [15–17].

Several issues arise with the prior definition of accessibility. First, there are several synonyms for accessibility; such as availability and access. Next for the essential requirement for a clear definition. Another problem is ambiguity for use this term for specialized service user [18].

Also, when discussing between access or accessibility to healthcare and the nursing meta-paradigm, several authors describe such as, communicating, waiting time, increased risk and insurance coverage will be several reasons for using access to healthcare [19–21]. Another journal wrote about a person or patients conditions, which who increasing length of hospital stay which correlated expensive hospital fees (economic condition) and families' stress, become several causes for improve accessibility to healthcare [22–24]. Related with environment as meta-paradigm nursing, for example; inequality between rural and urban areas, geographical distribution, some barriers and challenges, distance and transportation become factual on environments which need to improve accessibility to healthcare [25–29]. Further on nursing as meta-paradigm, was detects nursing which needs a strong vision, nurse practice act, legislation for nursing practice, clear for share staffing, financial constrain, working condition, skill, and knowledge [30–34].

II. OBJECTIVE

The objective of this article is to make an unambiguous concept of accessibility to healthcare with the Walker and Avant method.

III. METHODOLOGY

Methodology for clear this concept is utilized 8 steps of Walker and Avant strategies on concept analysis. Walker and Avant more concerned on how to develop the concept which three types. They are considered time which will change the concept and to facilitate purpose more easily (Background and theoretical study) [35].

Author use PubMed, Mendeley, Science Direct and Scopus database for systematic review. Look for keywords of accessibility or access or availability and health and nursing. We are found 35 articles for deliberation. We were used year of publication between 2010-2020.

Inclusion criteria: appear on title journal the word "access or accessibility or availability". After that the content of the article describes accessibility to healthcare, criticism of accessibility to healthcare framework, and deliberation for conceptual analysis. Exclusion criteria: consider word title on an article, not include article type, ex. Symposium, seminar result, textbook, etc.

IV. RESULT

Walker and Avant Concept Analysis Strategies and Results

1. *Select a Concept*

Accessibility to healthcare having several definitions related to another purpose, or it can mention broad concepts. Base on exploring above, the concept of access itself having five dimensions (Affordability, Approachability, Availability and accommodation, Appropriateness, and Acceptability) which make it several lens to ensure this concept. Because of that, it important to understand accessibility to healthcare-related with literature of nursing was be analysis in this paper.

2. *Establish the Aims or Purpose*

For reason to reflect how to minimize from large of broad a concept and for increasing quality of life and human well-being, we need to secure access to healthcare [36].

The concept of accessibility to healthcare is important for nurses. It is need for seeks the limits and to add the cognition for comprehensive and weightiness of accessibility to healthcare. Further, to incorporate demands and ability especially the nurse profession for access to healthcare with broad dimensions of care and help from the services [17] [34].

3. *Recognize Utilize of Concept*

Accessibility to healthcare is necessary to explain connections between facilities and services, moreover on part of nursing care.

Several definitions were founded from sources' such as, first from three definitions of online library; being able and easy to be reached for understood (Cambridge Dictionary) [37], something can be reached, entered, used, and seen by somebody who has problem/limitation (Oxford dictionary) [38], a place, building, or object that is accessible from inaccessibility with powerful approachable (Longman dictionary) [39].

The second is from other journals; connected between health policy and characteristic for a system of health and risk population [40], the core of health care system for implementation with deliberate complexity of purpose [17], one of the problems related with public health [41], accessibility is not only board distance but also a limitation for travel to reach the health service [42], different standard or concept to fix the health professional gaps, and closest distance for public health facilities and health service [43], the contribution of five elements to improve rural health care [44], accessibility subject are the outcome, equipment, service, or environment which needed and demanded for persons with disabilities, or human with functional limitations [15], and accessibility to healthcare definition are some barriers for disabilities patients' [45].

4. *Determine the Defining Attributes*

Attribute for concept analysis related with characteristic of concept, connection of concept with another word, meaning, and definition, how to intercourse with another concept which discovered and make it more understandable for all [46].

Related with concept of accessibility to healthcare, several attributes will be exposed below:

4.1 *Availability healthcare*

The first attribute of accessibility to healthcare concepts is available to healthcare. It included how to cover and organized than guidance for the population to use public health service.

One case is how to ensure the in-vitro diagnostics is limited settings using Supply Chain Management for support POC (Point-of-Care) test [47]. Another case is for cancer patients on palliative care, which support access for health education, knowledge for service, physical and social well-being [48].

Further, make access to healthcare easy to reach in all condition [32] and the last referral to access healthcare without geographical distribution problems [49].

4.2 Knowledge

The important for these attributes are to expose good information, needs, and trends on accessibility to healthcare. Sierra Leone, which a part of some rural areas in the world with high of case maternal mortality, even though the government support by free health care for pregnant women, the problem is related knowledge of women in there [25].

Furthermore, for improve healthcare services, the evaluation process is strategies to evaluate knowledge, knowledge becomes one of important value for direct impact to accessibility to healthcare [50]. As a health profession, nursing knowledge must be used for problem-solving, such as make community care closer for communities or more improve knowledge of nursing with another nursing ability [34] [51].

4.3 Healthcare cost

This attributes concern about health financing. Limitation for distance and time can effect for quality of healthcare service and how to manage healthcare cost [52]. Another author describes related socioeconomic status with household facilities to prevent disease, such as sanitation, hand washing, and latrine [53].

Similar to expose above related to healthcare cost, the problem founding if the patient needed to long term of caring such as elderlies, one position is needed for long term services and another side for cutting the cost [29].

4.4 Health services

The health services attribute is to make clear related to health service, health mechanism, and strategies of health which support by the government.

Health program service and inequalities services of public healthcare make burden for patients, family of patient, and health workforce, finally rise health perceptions [24] [42]. Because of that, in Cambodia, the government efforts are supporting Cambodia's maternal healthcare services [54] or support by (VAMC) Veteran Administration Medical Center with E-consult program for older men with osteoporosis fracture [55]. And the GOG (Government of Ghana) ways for reducing the spread of TB is improving access to PHC in the Upper East Region (EUR) for easy access to TB testing [56].

4.5 Healthcare workforce

Internal medicine with specialist is higher available in urban area and another area support by family medicine physicians [57]. Further, problems related to healthcare providers, which must expose female condoms include training, marketing strategies, and distribution even though, this is important for protecting and safety sex for woman [58].

Meanwhile, another challenge is related social-cultural environment, which the health workforce must continuum to care in rural areas [59]. Several expose above are reasons for

the healthcare workforce as attributes of accessibility to healthcare.

4.6 Safety

Safety as attributes for the concept of accessibility to healthcare is to understand for access to essential medicines and to ensure of standard quality.

Beginning with accessibility for using opioid pain medicines in Vietnam, the author suggesting for to consider evidence base safe access for medical uses [60]. Reducing maternal mortality becomes the major target on the Government of Ghana, therefore they more concern about POC diagnostic for safety diagnostic especially on rural area [27].

Safe for services not just stopped on safety for tool or capabilities people for it, but also to secure the staffing norms, must include from healthcare providers, facilities of healthcare, and system of emergency transfer [31] and characteristic of the organization, for example, Primary Health care (PHC), become one of important key for safety as attributes of accessibility to healthcare concept's [61].

5. Construct a Model Case

A patient comes to PHC in K. district with the symptoms difficulty for speak, paralyzed on the right part of the body, and unconscious. From his family, during a week ago, the patient was felt unhealthy, often tingling sensation and unclear to speak, but he is rejected when family suggesting to examined to PHC. The patient had a history of high blood pressure, 62 years old, with obesity and after retiring from his work, he is feel hopeless and often to keep alone. (Knowledge)

Stroke attack is the diagnosis from family medicine on PHC now, fortunately, before 30 seconds the patient was to secured. (Availability healthcare) But because of the limitation equipment for continue to care in PHC, the doctor suggested for the move to a public hospital on the city. Today, the patient having a more completely caring in hospital. He and his family coverage with government insurance and its helping for it, because of the stroke need for long term care. (Healthcare cost)

In the hospital, he is staying on the room of stroke with support by good equipment and competence of the health workforce for caring stroke which education level and training or workshop for stroke caring. (Health workforce) The nursing having a schedule for optimum his health, especially for limitation for motion, learned patient and family how to do passive ROM (Range of Motion) before continuing to active ROM for the third time a week. (Health service) Before and after this exercise, the nurse keeps safety first, prepare the environment, time, health condition, and the ability for patient, family, and nursing. (Safety)

Case model expose on all attributes related concept which found on sources.

6. Construct Borderline and Contrary Cases

Borderline case mentions several attributes of the concept, but not all, for example: for one week Mr. T. is absent from his workplace, he feels often headache, weakness, and sometimes paralyzed if morning weak up. He is worry about

this condition but afraid to speak out with his family. (Knowledge)

For wasting time, he goes outside for walking in this morning. When he feels for walking, he wanted to back home, but suddenly he is feels painful on the left side of the chest, can't breaths and fainting. Another neighbor showed and bring to the hospital, they live in big city but fortunately because pandemic of the corona, not founding the traffic jam problem, and they arrive in hospital for less than 2 hours. (Availability healthcare)

Mr. T. keeps survive to live after a stroke attack but with several limitations, based on his condition, he is must do several treatments with several health workers. (Health workforce) Nursing was created a schedule for it, they learn, practice, and give health education with family and patient. (Health service) Mr. T. feels boring with this activity and choose to cut off the hospital treatment and finally, he is trying another care except hospital care, if during one week nothing changes condition, he is trying another caring or curing without respect with another effect for health.

Character of represents healthcare cost and safety to healthcare are absent in this instance, although the other attributes visible in this case, because of that, this is called a borderline case.

An example case for the contrary case is shown: on weak up, Mrs. Z. getting facial and foot paralysis. She is panic but she had reason maybe some animal was beating her face and tired on the feet for walking yesterday, and for a moment paralysis is gone. She had an appointment for a meeting with the client to present her product, and they will be meeting on some of the junk food resto which Mrs. Z.'s favorite food, junk food is like relaxing for her except she is obese today.

She is a little nervous about this present, because of that she is try to smoke and eat junk food before the meeting. During the presentation, everything will be ok, until she is getting a problem for expose and speak out one word, she is still trying to speak until she can't out of voice from her mouth and fainting.

In the contrary case, all attributes of accessibility to healthcare are not present. This case did not explain the availability of healthcare, knowledge, healthcare cost, healthcare workforce, and safety.

7. *Recognize Antecedents And Consequences*

Accessibility of healthcare's antecedents for this article is to explain several incidents which early or promote the concepts [62-63]. In this concept, was found some antecedents for to more understand the rise of accessibility to healthcare, among others; limited (setting, resource, access, geographical, and time) [26-28] [32-33] [47-49] [52] [54-55] [57] [60], individual barriers and perceptions [25] [48] [50] [58] [61] [65-66], and poor healthcare access [24] [42] [68].

Consequence as impact from reaction of concept [63]. Consequence of accessibility to healthcare such as, change environment [30] [64] [57], decision making [25] [30] [66-69], improve access to healthcare [33] [48] [66] [68-69], and regulation or reform policy and healthcare management [24] [33] [51] [53-55] [58].

8. *Define Empirical Referents*

To assess concept accessibility to healthcare, author use several mainly literature references, such as Geographical Accessibility to District Hospitals/Medical Laboratories for Comprehensive Antenatal Point-of-Care Diagnostic Services in the Upper East Region, Ghana [26], Accessibility, affordability and use of health services in an urban area in South Africa [42], Using the evaluation process as a lever for improving health and healthcare accessibility: The case of HCV services organization in Quebec [50], Updating and Normalization of the Nursing Management Minimum Data Set Element 6 [52], Toward Safe Accessibility of Opioid Pain Medicines in Vietnam and Other Developing Countries: A Balanced Policy Method [60], and Barriers to and strategies for addressing the availability, accessibility, acceptability, and quality of the sexual, reproductive, maternal, newborn and adolescent health workforce: addressing the post-2015 agenda [69].

V. DISCUSSION

The first definition for accessibility refers to the distance that can be traveled to the health facilities for getting comprehensive service, with the end product is increased maternal health care [49].

Another discussion considers travel impedance between patient area and health care location with understanding geographical dimension is one of meaning for accessibility. However, adequate access can't stand alone, it must support by similar condition for health potency by the level of social life, geographic location, etc., on conclude, must understand about five dimensions of accessibility of services such as 1) Approachability (ability people for access to facilities of healthcare); 2) Acceptability (characteristic people for accept and utilize healthcare service); 3) Availability and accommodation (ability to coverage access to healthcare); 4) Affordability (related with economic condition for support cost for access to healthcare service); 5) Appropriateness (suitability between healthcare service and facilities with patients' requirements) [17].

VI. CONCLUSION

The concept of accessibility to healthcare which particular in nursing is various meanings. The definition of accessibility to healthcare is an important part of holistic care, therefore several natures of healthcare professional background having different definitions. Use strategies of concept analysis by Walker and Avant, the author tries to explore definitions and meaning from several sources and make conclusions related to attributes for accessibility to healthcare (availability healthcare, knowledge, healthcare cost, health services, healthcare workforce, and safety) expose several antecedence and consequence related with concept analysis. Not only that, the author gives case examples for model case, borderlines case, and contrary case related concepts. All these components as a concept of accessibility to healthcare are defined from several sources.

ACKNOWLEDGMENT

The author would like to sincerely thank for the University of Muhammadiyah East Kalimantan, the University of Muhammadiyah Semarang, the University of Aisyiyah Surakarta, the STIKes Karya Kesehatan, the Ngudi Waluyo University, and the Institute of Health Science Kendal for support and cooperation in this team. The last but not less is for all classmates at Diponegoro University in the first of Community Concentration, and all parties that cannot mention one by one by the author.

REFERENCES

- [1] World Stroke Organization. Face the Fact: Stroke is Treatable. <https://www.worldstrokecampaign.org/ko/learn/face-the-facts-stroke-is-treatable.html>. Published 2016.
- [2] American Heart Association. Heart Disease and Stroke Statistics-2019. 2019.
- [3] Anderson CS. The global burden of stroke : persistent and disabling The global burden of neurological disorders. *Lancet Neurol.* 2019;18(5):417-418. doi:10.1016/S1474-4422(19)30030-4
- [4] Johnson CO, Nguyen M, Roth GA, et al. Global, regional, and national burden of stroke, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *Lancet Neurol.* 2019;18(5):439-458. doi:10.1016/S1474-4422(19)30034-1
- [5] Richards NC, Gouda HN, Durham J, Rampatige R, Rodney A, Whittaker M. Disability, noncommunicable disease and health information. *Bull World Health Organ.* 2016;94(3):230-332. doi:10.2471/BLT.15.156869
- [6] Pitthayapong S, Thiangtam W, Powwattana A, Leelacharas S, Waters CM. A Community Based Program for Family Caregivers for Post Stroke Survivors in Thailand. *Asian Nurs Res (Korean Soc Nurs Sci).* 2017;11(2):150-157. doi:10.1016/j.anr.2017.05.009
- [7] Somerville E, Minor B, Keglovits M, Yan Y, Stark S. Effect of a Novel Transition Program on Disability After Stroke: A Trial Protocol. *JAMA Netw open.* 2019;2(10):e1912356. doi:10.1001/jamanetworkopen.2019.12356
- [8] Avan A, Digaleh H, Napoli M Di, Stranges S, Behrouz R, Shojaeianbabaei G. Socioeconomic status and stroke incidence , prevalence , mortality , and worldwide burden : an ecological analysis from the Global Burden of Disease Study 2017. 2019.
- [9] Venketasubramanian N, Yoon W, Pandian J, Navarro C. Stroke Epidemiology in South , East , and South-East Asia : A Review. 2017;19(3):286-294.
- [10] The George Institute for Global health. Reducing the Burden of Cardiovascular Disease in Indonesia.; 2017.
- [11] Dinas Kesehatan Provinsi Kalimantan Timur. Profil Kesehatan Kaltim 2016.; 2017.
- [12] Kementerian Kesehatan Republik Indonesia. RISKESDAS 2018.; 2018. doi:1 Desember 2013
- [13] Maharani A, Id S, Praveen D, Id DO. Cardiovascular disease risk factor prevalence and estimated 10-year cardiovascular risk scores in Indonesia : The SMARThealth Extend study. 2019:1-13.
- [14] Mahendradhata et all. The Republic of Indonesia Health System Review Asia Pacific Observatory on Health Systems and Policies. Vol 7.; 2017. <http://apps.who.int/iris/bitstream/handle/10665/254716/9789290225164-eng.pdf;jsessionid=52CB57A62E59CA58949742AD7C5E7793?sequence=1>.
- [15] Kulkarni M. Digital accessibility: Challenges and opportunities. *IIMB Manag Rev.* 2019;31(1):91-98. doi:10.1016/j.iimb.2018.05.009
- [16] Alzoubi AM, Nusair AA, Taha LM. GIS based Multi Criteria Decision Analysis for analyzing accessibility of the disabled in the Greater Irbid Municipality Area, Irbid, Jordan. *Alexandria Eng J.* 2019;58(2):689-698. doi:10.1016/j.aej.2019.05.015
- [17] Levesque JF, Harris MF, Russell G. Patient-centred access to health care: Conceptualising access at the interface of health systems and populations. *Int J Equity Health.* 2013;12(1):1. doi:10.1186/1475-9276-12-18
- [18] Frenk J. Concept and measurement of accessibility. 2015;(June).
- [19] Zogg CK, Scott JW, Metcalfe D, et al. Association of Medicaid Expansion with Access to Rehabilitative Care in Adult Trauma Patients. *JAMA Surg.* 2019;154(5):402-411. doi:10.1001/jamasurg.2018.5177
- [20] Badanta-Romero B, Lucchetti G, Barrientos-Trigo S. Access to healthcare among Chinese immigrants living in Seville, Spain. *Gac Sanit.* 2020;(xx). doi:10.1016/j.gaceta.2019.09.008
- [21] Luvuno ZP, Mchunu G, Ncama B, Ngidi H, Mashamba-Thompson T. Evidence of interventions for improving healthcare access for lesbian, gay, bisexual and transgender people in South Africa: A scoping review. *African J Prim Heal Care Fam Med.* 2019;11(1):1-10. doi:10.4102/phcfm.v11i1.1367
- [22] Nakanishi M, Ogawa A, Nishida A. Availability of home palliative care services and dying at home in conditions needing palliative care: A population-based death certificate study. *Palliat Med.* 2020. doi:10.1177/0269216319896517
- [23] Maynard R, Christensen E, Cady R, et al. Home health care availability and discharge delays in children with medical complexity. *Pediatrics.* 2019;143(1). doi:10.1542/peds.2018-1951
- [24] Camden C, Swaine B, Tétreault S, Brodeur MM. Reorganizing pediatric rehabilitation services to improve accessibility: Do we sacrifice quality? *BMC Health Serv Res.* 2010;10. doi:10.1186/1472-6963-10-227
- [25] Treacy L, Bolkan HA, Sagbakken M. Distance, accessibility and costs. Decision-making during childbirth in rural Sierra Leone: A qualitative study. *PLoS One.* 2018;13(2):1-17. doi:10.1371/journal.pone.0188280
- [26] Kuupiel D, Adu KM, Bawontuo V, Mashamba-Thompson TP. Geographical Accessibility to District Hospitals/Medical Laboratories for Comprehensive Antenatal Point-of-Care Diagnostic Services in the Upper East Region, Ghana. *EClinicalMedicine.* 2019;13:74-80. doi:10.1016/j.eclinm.2019.06.015
- [27] Kuupiel D, Tlou B, Bawontuo V, Mashamba-Thompson TP. Accessibility of pregnancy-related point-of-care diagnostic tests for maternal healthcare in rural primary healthcare facilities in Northern Ghana: A cross-sectional survey. *Heliyon.* 2019;5(2). doi:10.1016/j.heliyon.2019.e01236
- [28] Frota M. Nursing service quality, availability, accessibility and acceptability in communicable and chronic diseases prevention and treatment as well as in the primary health care. *Int J Nurs Sci.* 2017;4(4):349. doi:10.1016/j.ijnss.2017.10.015
- [29] Sasaki K, Aihara Y, Yamasaki K. The effect of accessibility on aged people's use of long-term care service. *Transp Res Procedia.* 2017;25:4381-4391. doi:10.1016/j.trpro.2017.05.320
- [30] Clavelle T Joanne. Transformational leadership. *Int J Learn Intellect Cap.* 2012;2(4):321-326. doi:10.5430/wje.v7n4p1
- [31] Pattinson RC. Safety versus accessibility in maternal and perinatal care. *South African Med J.* 2015;105(4):261-265. doi:10.7196/SAMJ.9182
- [32] Dileep Kumar T. Nursing service quality, availability, accessibility and acceptability in communicable and chronic diseases prevention and treatment as well as in the primary health care. *Int J Nurs Sci.* 2017;4(4):352. doi:10.1016/j.ijnss.2017.10.017
- [33] Sarkisova V. Quality of nursing care, availability and accessibility of treatment and prevention of communicable and chronic diseases. *Int J Nurs Sci.* 2017;4(4):350-351. doi:10.1016/j.ijnss.2017.10.016
- [34] Hlungwani S. Nursing service quality, availability, accessibility and acceptability in communicable and chronic diseases prevention and treatment as well as in the primary health care. *Int J Nurs Sci.* 2017;4(4):356. doi:10.1016/j.ijnss.2017.10.019
- [35] Havenga Y, Poggenpoel M, Myburgh C. Developing a Model: An Illustration. *Nurs Sci Q.* 2014;27(2):149-156. doi:10.1177/0894318414526814
- [36] Rekha RS, Wajid S, Radhakrishnan N, Mathew S. Accessibility Analysis of Health care facility using Geospatial Techniques. *Transp Res Procedia.* 2017;27:1163-1170. doi:10.1016/j.trpro.2017.12.078
- [37] Accessibility. Cambridge Dictionary. <https://dictionary.cambridge.org/dictionary/english/accessibility>. Accessed March 27, 2020.
- [38] Accessibility. Oxford Dictionary. <https://www.oxfordlearnersdictionaries.com/definition/english/accessibility?q=accessibility>. Accessed March 27, 2020.
- [39] Accessibility. Longman Dictionary. https://www.ldoceonline.com/dictionary/accessible#accessible__6. Accessed March 27, 2020.

- [40] Islam MS, Aktar S. Measuring physical accessibility to health facilities-- a case study on Khulna City. *World Health Popul.* 2011;12(3):33-41. doi:10.12927/whp.2011.22195
- [41] Paez A, Mercado RG, Farber S, Morency C, Roorda M. Accessibility to health care facilities in Montreal Island: An application of relative accessibility indicators from the perspective of senior and non-senior residents. *Int J Health Geogr.* 2010;9:1-15. doi:10.1186/1476-072X-9-52
- [42] Stellenberg EL. Accessibility, affordability and use of health services in an urban area in South Africa. *Curatiosis.* 2015;38(1):1-7. doi:10.4102/curatiosis.v38i1.102
- [43] Launay L, Guillot F, Gaillard D, et al. Methodology for building a geographical accessibility health index throughout metropolitan France. *PLoS One.* 2019;14(8):1-15. doi:10.1371/journal.pone.0221417
- [44] MacKinney Clinton, Coburn Andrew, Lundblad Jennifer et al. Access to Rural Health Care: A Literature Review and New Synthesis. *Rural Policy Res Inst.* 2014;(August):1-25. <http://www.rupri.org/?library=access-to-rural-health-care-a-literature-review-and-new-synthesis-report-prepared-by-the-rupri-health-panel-august-2014>.
- [45] Lagu T, Griffin C, Lindenauer PK. Ensuring access to health care for patients with disabilities. *JAMA Intern Med.* 2015;175(2):157-158. doi:10.1001/jamainternmed.2014.6740
- [46] Foley AS, Davis AH. A Guide to Concept Analysis. *Clin Nurse Spec.* 2017;31(2):70-73. doi:10.1097/NUR.0000000000000277
- [47] Kuupiel D, Bawontuo V, Drain PK, Gwala N, Mashamba-Thompson TP. Supply chain management and accessibility to point-of-care testing in resource-limited settings: a systematic scoping review. *BMC Health Serv Res.* 2019;19(1):519. doi:10.1186/s12913-019-4351-3
- [48] Lakew S, Musema H, Shimeles T, Challinor J. Assessment of knowledge, accessibility and utilization of palliative care services among adult cancer patients at Tikur Anbesa Specialized Hospital, Addis Ababa, Ethiopia, 2014: A cross-sectional institution based study *Palliative Care.* *BMC Res Notes.* 2015;8(1):1-8. doi:10.1186/s13104-015-1630-x
- [49] Kuupiel D, Adu KM, Bawontuo V, Mashamba-Thompson TP. Geographical Accessibility to District Hospitals/Medical Laboratories for Comprehensive Antenatal Point-of-Care Diagnostic Services in the Upper East Region, Ghana. *EClinicalMedicine.* 2019;13:74-80. doi:10.1016/j.eclinm.2019.06.015
- [50] Brousselle A, Petit G, Giraud MJ, Rietmann M, Boisvert K, Foley V. Using the evaluation process as a lever for improving health and healthcare accessibility: The case of HCV services organization in Quebec. *Eval Program Plann.* 2016;55:134-143. doi:10.1016/j.evalprogplan.2016.01.004
- [51] Katoba J, Hangulu L, Mashamba-Thompson TP. Evidence of accessibility and utility of point-of-care diagnostics as an integral part of prevention of mother-To-child transmission services: Systematic scoping review protocol. *BMJ Open.* 2017;7(11):1-5. doi:10.1136/bmjopen-2017-017884
- [52] Kunkel DE, Westra BL, Hart CM, Subramanian A, Kenny S, Delaney CW. Updating and normalization of the nursing management minimum data set element 6: Patient/client accessibility. *CIN - Comput Informatics Nurs.* 2012;30(3):134-141. doi:10.1097/NCN.0b013e31823eb913
- [53] Park MJ, Clements ACA, Gray DJ, Sadler R, Laksono B, Stewart DE. Quantifying accessibility and use of improved sanitation: Towards a comprehensive indicator of the need for sanitation interventions. *Sci Rep.* 2016;6(October 2015):1-7. doi:10.1038/srep30299
- [54] Ju Hwang W, Mi Park Y. Factors influencing the accessibility of maternal health service in Cambodia. *Int J Environ Res Public Health.* 2019;16(16). doi:10.3390/ijerph16162909
- [55] Lee R, Pearson M, Lyles KW, Jenkins PW, Colon-Emeric C. Geographic scope and accessibility of a centralized, electronic consult program for patients with recent fracture. *Rural Remote Health.* 2016;16(1):1-12.
- [56] Arakawa T, Arcêncio RA, Scatolin BE, Scatena LM, Ruffino-Netto A, Villa TCS. Accessibility to tuberculosis treatment: assessment of health service performance. *Rev Lat Am Enfermagem.* 2011;19(4):994-1002. doi:10.1590/s0104-11692011000400019
- [57] Naylor KB, Tootoo J, Yakusheva O, Shipman SA, Bynum JPW, Davis MA. Geographic variation in spatial accessibility of U.S. Healthcare providers. *PLoS One.* 2019;14(4). doi:10.1371/journal.pone.0215016
- [58] Phiri SS, Rikhotso R, Moagi MM, Bhana VM, Jiyane PM. Accessibility and availability of the Female Condom2: Healthcare provider's perspective. *Curatiosis.* 2015;38(2):1533. doi:10.4102/curatiosis.v38i2.1533
- [59] Turab A, Ariff S, Habib MA, et al. Improved accessibility of emergency obstetrics and newborn care(EmONC) services for maternal and newborn health: A community based project. *BMC Pregnancy Childbirth.* 2013;13(1):1. doi:10.1186/1471-2393-13-136
- [60] Krakauer EL, Phuong Cham NT, Husain SA, et al. Toward safe accessibility of opioid pain medicines in vietnam and other developing countries: A balanced policy method. *J Pain Symptom Manage.* 2015;49(5):916-922. doi:10.1016/j.jpainsymman.2014.10.012
- [61] Paré-Plante AA, Boivin A, Berbiche D, Breton M, Guay M. Primary health care organizational characteristics associated with better accessibility: Data from the QUALICO-PC survey in Quebec 11 Medical and Health Sciences 1117 Public Health and Health Services. *BMC Fam Pract.* 2018;19(1):1-8. doi:10.1186/s12875-018-0871-x
- [62] Yazdani S, Hosseini F, Ahmady S. System based practice: a concept analysis. *J Adv Med Educ Prof.* 2016;4(2):45-53.
- [63] Bonneau Katie, Neurohr Courtney VSL. Differentiate: A Concept Analysis. 2015;2:2-5.
- [64] Garner SL, Sudia T, Rachaprolu S. Smart phone accessibility and mHealth use in a limited resource setting. *Int J Nurs Pract.* 2018;24(1):1-5. doi:10.1111/ijn.12609
- [65] Lobo A, Duarte P, Carvalho A, Rodrigues V, Monteiro MJ, Alves H. The Association of Equity, Accessibility, and Price With Primary Healthcare User's Satisfaction. *West J Nurs Res.* 2014;36(2):191-208. doi:10.1177/0193945913497830
- [66] Rexhaj S, Leclerc C, Bonsack C, Golay P, Favrod J. Feasibility and accessibility of a tailored intervention for informal caregivers of people with severe psychiatric disorders: A pilot study. *Front Psychiatry.* 2017;8(SEP):4-12. doi:10.3389/fpsy.2017.00178
- [67] Gebremariam MK, Lien N, Torheim LE, et al. Perceived rules and accessibility: Measurement and mediating role in the association between parental education and vegetable and soft drink intake. *Nutr J.* 2016;15(1). doi:10.1186/s12937-016-0196-3
- [68] Mashamba-Thompson TP, Drain PK, Sartorius B. Evaluating the accessibility and utility of HIV-related point-of-care diagnostics for maternal health in rural South Africa: A study protocol. *BMJ Open.* 2016;6(6). doi:10.1136/bmjopen-2016-011155
- [69] Homer CSE, Castro Lopes S, Nove A, et al. Barriers to and strategies for addressing the availability, accessibility, acceptability and quality of the sexual, reproductive, maternal, newborn and adolescent health workforce: Addressing the post-2015 agenda. *BMC Pregnancy Childbirth.* 2018;18(1):1-11. doi:10.1186/s12884-018-1686-4