



ORIGINAL ARTICLE

## Knowledge and Utilization of Referral System among Health Care Workers in selected Primary Health Care centres in Oyo State, Nigeria

Oluseye OM<sup>1</sup>, Kehinde DR<sup>2</sup>, Akingbade O<sup>2</sup>, Ogunlade OL<sup>2</sup>, Onyebigwa OO<sup>2</sup>, Oluwatosin OA<sup>2</sup>

<sup>1</sup>School of Nursing, Ilaro, Ogun State

<sup>2</sup>Department of Nursing, Faculty of Clinical Sciences, University of Ibadan, Ibadan Oyo State

### Keywords:

Knowledge,  
Utilization,  
Referral  
System,  
Health care  
workers,  
Primary  
Health Care  
Centres

### ABSTRACT

**Background:** Referral system is one of the strategies in place across all levels of health care settings for adequate use of health care resources and services. This study assessed the knowledge and utilization of referral system among health care workers in selected Primary Health Care (PHC) centers in Ibadan, Oyo State, Nigeria.

**Methods:** This study was a descriptive study that utilized structured questionnaire to collect data. Simple random sampling was used to select eighty-eight health workers from thirteen selected Primary Health Care Centers. Data were analyzed using descriptive statistics.

**Results:** Sixty-six (75.0%) of the respondents indicated that there are three levels of health care system. Sixty-two (93.2%) health care workers knew that referral system can be from lower to higher level of care and 61 (69.3%) knew that referral system can be from higher to lower level of care. Only 21 (23.9%) of the respondents refer patients frequently and 66 (75.1%) of them mostly refer to secondary health care facility. Factors identified by respondents as influencing utilization of referral system included distance of one facility to another 74 (84.1%) social support 71 (80.7%) and availability of referral forms 70 (79.6%).

**Conclusion:** Good knowledge of referral system was demonstrated by the participants; however, the implementation of the process was poor. It is vital that future studies should explore identified factors since a functional referral system is vital for effective health care system.

### Correspondence to:

Olabisi Mary Oluseye  
School of Nursing,  
Ilaro Ogun State

E-mail: olubim4real@yahoo.com  
Telephone: +234 8052079518

## INTRODUCTION

Referral in health care delivery is a process by which a health worker at one level of health care facility sends a patient to another health worker/facility who have appropriate resources in managing the condition.<sup>1</sup> Referral can be from lower level of care to higher level for effective management of condition or vice versa for continuity of care and follow up. Referral system is referred to as a system because it comprises several parts, among

such are the following: health system issues, initiating facility, referral practicalities, receiving facility, supervision and capacity building and continuous quality improvement.<sup>2-3</sup> Referral system in Nigeria is fraught with a number of challenges. Primary Health Care (PHC) centres in Nigeria have suffered from gross under-utilization. While the primary health care institutions should be the first point of call for clients seeking medical care, many directly assess the higher levels of

care even for conditions that can be handled by the former; thus overburdening these higher levels.<sup>4,5</sup> Similarly, the lines of communication between the PHC and the other levels of care is worrisome.<sup>5</sup> Studies have shown that referral forms are not readily available in the PHC facilities while many do not have telephone directories. Furthermore, the referral system does not provide opportunity for feedback about the patients referred.<sup>4,6</sup>

Studies have alluded to the poor utilization of the referral system in Nigeria. A number of factors have been implicated which include: inadequate knowledge of referral process among health care workers, poor road network, poor awareness of available health facilities.<sup>7-9</sup> Similarly, poor public awareness, patient's non-compliance, patient preference, poverty and poor support have impacted the system in no small measure.<sup>10-12</sup> The state of referral system in Nigeria prompted the researchers to assess the knowledge and utilization of referral system among health care workers in selected Primary Health Care centres in Oyo State, while also assessing factors influencing the system with a view to proffering useful recommendations.

## METHODOLOGY

This was a descriptive study which assessed the knowledge and utilization of referral system among health care professionals in Primary Health Care (PHC) centres in Ibadan North Local Government Area (LGA), Ibadan, Oyo State, Nigeria. Ibadan North Local Government is one of the local governments in Ibadan. It is bounded in the West by Ido and Ibadan North West LGAs. The boundaries in the East are: Lagelu, Egbeda and Ibadan South East LGAs, respectively. The northern boundary is Akinyele LGA. Ibadan North LGA comprises of 12 wards. This LGA consists of multi-ethnic nationalities predominantly dominated by the Yoruba, Igbo, Benins,

Urhobos, Itsekiris, Ijaws, Hausas and Fulani. The thirteen functional PHC centres in this LGA were used for the study. There are a total of 98 health care workers in the thirteen PHC centres. The sample size was calculated using Cochran formula<sup>13</sup> given as:

$$n = \frac{Z^2 pq}{e^2} \text{ where } p \text{ is the (estimated) proportion of the population which has the attribute in question (0.5); } q \text{ is } 1 - p \text{ and } e \text{ is the desired level of precision (0.05).}$$

$$= \frac{1.96^2 0.5(1-0.5)}{0.05^2} = 384.2$$

The minimum sample size of a finite population (<10,000) was determined using the formula:<sup>13, 14</sup>

$$nf = \frac{n}{1 + \frac{n}{N}}$$

where N = Estimate of the population size; n = Desired sample size when population is <10,000 and n = Desired sample size when population is >10,000; nf = 384 / (1 + 384/98) = 78

Ten percent of the minimum sample size (78) was added to the desired sample size in a bid to account for non-response rate: 78 + 8 = 86 health care workers.

The calculated sample size (86) was divided across the entire Primary Health Care centers proportionately. After which the researchers selected the participants using simple random sampling technique according to the proportion of each. All health care workers who participate in caring for clients in the setting were part of the study. They include nurses, community health officers and community health extension workers in the PHC centres. Health workers that were on leave and those that had no interest in the

study were exempted. The instrument for the study was a self-administered structured questionnaire which was developed following extensive literature review and researchers' observations during community clinical posting. The questionnaire was subjected to face and content validity and test re-test reliability test. The reliability test was conducted among health care workers in another Primary Health Care centre in Akinyele Local Government Area, Ibadan Oyo State, Nigeria. A value of 0.81 was obtained.

The questionnaire had four sections: Section A sought for information on socio-demographic information of the respondents; Section B: knowledge of respondents on referral system. The total number of test items was 9. Each correct response in Sections B was scored 1 while incorrect response was scored 0. A score of 0-2 was termed low level of knowledge; 3-5, mid-level of knowledge and 6-9 was termed high level of knowledge. Section C assessed the utilization of referral system. It consists of 15 questions. Responses on referral system utilization by respondents were presented in table of frequency and percentage. Section D addressed perceived factors influencing utilization of the referral system. The total number of test items was 13 and questions were set using five-point Likert Scale as follows: Strongly Agreed (SA), Agreed (A), Undecided (UN), Disagreed (D), Strongly Disagreed (SD). During analysis, responses were presented in frequencies and percentages and the variables were grouped into positive and negative statements with responses categorised into agreed (strongly agreed and agreed) and disagreed (disagreed, strongly disagreed and undecided).

Ethical approval was obtained from Ethical Review Board of Oyo State. Permission was sought and obtained from the PHC Coordinator of the Local Government which was presented at the facilities. Each study

participant was given detailed information on the research to be carried out. Verbal informed consent was obtained from the participants before the study. The study participants were assured that the study will pose no harm but will only require an average of 30 minutes out of their time to answer the questions. Participants were given freedom to decide to participate or not. Freedom to opt out of study at any stage without any consequences was communicated to the participants. In addition, they were allowed to ask for clarification about the purpose of study. The essence of the research and its protocol was explained to the participants. Each participant was given the questionnaire privately in their unit in order to ensure privacy, information provided were kept confidentially throughout the period of data collection and anonymity was assured. All ethical principles namely autonomy, beneficence, non-maleficence were adhered to. Rights of respondents were maintained throughout the research process. Researchers together with the help of two research assistants administered questionnaire to the health workers who met the inclusion criteria. Two research assistants were utilized. They are registered nurses and were trained for a day.

After collection of data from each participant the questionnaire was checked for completion. The coded data were analysed using Statistical Package for the Social Sciences (SPSS) version 22.0. Descriptive statistics was done for variables such as knowledge of referral system, utilization of referral system and perceived factors influencing utilization of referral system. The results were presented in frequencies, percentages and chart.

## RESULTS

Eighty-eight health care workers participated in the study. Majority of the respondents were Community Health Extension Workers 35

(39.8%). Seventy-three (83%) of the respondents had Diploma and fifty-three (60.2%) had less than twenty years of experience at work (Table 1). Majority of the respondents 66 (75.0%) said there are three levels of health care system. High percentage 62 (93.2%) indicated that referral system can be from lower level of care to a higher level and 61 (69.3%) said referral system can be from higher level of care to lower level of care. Majority of the respondents have knowledge of the components of referral system, 84 (95.5%) and 80 (90.9%) indicated health system issue and continuous quality improvement as a component of referral system (Table 2). Summarily, 69 (78.4%) of the respondents had a moderate level of knowledge while 11 (12.5%) had low level of knowledge. Eight (9.1%) respondents had high level of knowledge (Table 2).

**Table 1: Socio-demographic characteristics of respondents**

Variables	Frequency (n=88)	Percent
<b>Age group (years)</b>		
21 – 30	12	13.6
31 – 40	29	33.0
41 – 50	37	42.0
51 – 60	10	11.4
<b>Sex</b>		
Male	27	30.7
Female	61	69.3
<b>Profession</b>		
Doctor	1	1.1
Nurse	15	17.0
Laboratory scientist	7	8.0
Community Health Officers	17	19.3
Community Extension Workers	35	39.8
Health Assistants	13	14.8
<b>Years of experience</b>		
≤ 20	53	60.2
21 – 30	12	13.6
>30	23	26.2

Thirty-six (40.9%) respondents indicated that they refer patients occasionally, 21 (23.9%) said they frequently refer their patents, and 31

(35.2%) said they rarely refer their patients. Majority of the respondents 66 (75.1%) usually refer patients to the secondary level of care. Majority of the respondents 65 (73.9%) said they always get feedback from the receiving facility after referring patient to them. Also majority of the respondents 64 (72.7%) said they do accompany their patients to the referral centre. Seventy-three (83.0%) of the respondents have a means of providing follow up for any client referred. However more than half of the respondents 58 (65.9%) said linkage facilitators are not involved in their referral process. More importantly 79 (89.8%) said there is no ambulance to facilitate referral of patient in their unit. Other results on utilization of referral system are in Table 3.

Seventy-four (84.1%) and 70 (79.5%) of the respondents, respectively agreed that the distance of facilities from themselves and availability of referral forms and other means of communications can influence utilization of referral system. Furthermore, 62 (70.4%) of the respondents disagreed with the statements that the preference of the client does not have a role to play in referral system and likewise 53 (60.2%) of the respondents disagreed with the statement that community participation is not important for referral system (Table 4).

## DISCUSSION

A PHC facility is a health care system designed to provide basic health care for individual, families, groups and community at large. This basic health care is care directed at health promotion, diseases prevention, prompt detection and treatment of minor injuries/ailments. Once health problem is beyond the jurisdiction of primary health care, referral is to be implemented. This study finding adds to the existing literature on the knowledge and utilization of referral system. This study reveals that majority of the respondents have knowledge of referral

**Table 2: Respondents' knowledge about referral system**

Knowledge domains	Frequency (n=88)	Percent
<b>Levels of health care</b>		
One	7	8.0
Two	13	14.8
Three	66	75.0
Four	2	2.3
<b>Types of referral</b>		
Lower to higher level of care	62	70.4
Higher to a lower of care	61	69.3
<b>Components of referral system</b>		
Health system issues	84	95.5
Initiating facility	77	87.5
Referral practitioners	77	87.5
Receiving facility	65	73.9
Supervision and capacity building	66	75.0
Continuous quality improvement	80	90.9
<b>Overall level of knowledge</b>		
High	8	9.1
Moderate	69	78.4
Low	11	12.5

**Table 3: Utilization of referral system**

Variables	Frequency (n=88)	Percent
<b>Frequency of referral</b>		
Frequently	21	23.9
Occasionally	36	40.9
Rarely	31	35.2
<b>Destinations of referral system usually utilized</b>		
Secondary	66	75.1
Tertiary	17	19.3
Private health facilities	5	5.6
<b>Source of referrals</b>		
Village/Traditional Health Workers	75	85.2
Primary Health centres	63	71.6
Private Health facilities	60	68.2
Comprehensive Health centres	58	65.9
State General Hospitals	49	55.7
Tertiary Hospitals	42	47.7
<b>Availability of other facilities</b>		
Availability of follow up services for referred client	73	83.0
Feedback mechanism from the receiving facility	65	73.9
Accompany patient to the referral centre	64	72.7
Communication prior referral	45	51.1
Availability of telephone directory	32	36.4
Availability of linkage facilitators	30	34.1
Availability of ambulance for referral	9	10.2

system which is in agreement with a study conducted in Billiri Local Government Area of Gombe State, Nigeria which identified that high percentage of the study participants had

knowledge of referral system and follow up after referral.<sup>15</sup> Adequate knowledge of referral system by health care workers will help in ensuring effective and efficient use of

**Table 4: Perceived factors influencing utilization of referral system**

Variables	A		D	
	N	(%)	n	(%)
<b>Positive Statements</b>				
The distance of facilities from one another can affect the referral system	74	(84.1)	14	(15.9)
The availability of referral forms and other communication networks can influence the utilization of referral system	70	(79.5)	18	(20.5)
Awareness of the health workers will go a long way in influencing the utilization of referral	66	(75.0)	22	(25.0)
Policies of the health facility can affect the referral system	62	(70.4)	26	(29.6)
Involvement of donor countries has a role in utilization of referral system	56	(63.6)	32	(36.4)
Private practice can influence the referral system	53	(60.2)	35	(39.8)
Financing PHCs can affect the referral system	50	(56.8)	38	(43.2)
<b>Negative Statements</b>				
Social support has no role to play in the utilization of referral system	17	(19.3)	71	(80.7)
The preference of the client does not have a role to play	26	(29.6)	62	(70.4)
Family support cannot affect utilization of the referral system	30	(34.1)	58	(65.9)
Counseling role of the referral officer cannot influence the utilization of the referral system	33	(37.5)	55	(62.5)
Community participation is not important in referral system	35	(39.8)	53	(60.2)
Financial ability of the client is not a factor to be considered in the referral system	39	(44.3)	49	(55.7)

A - Agree; D - Disagree

resources for better outcomes for patients.<sup>8</sup> This can be achieved through periodic training workshops on referral system. Utilization of referral system among the respondents was poor. Only about one-quarter of the study population refer their patient frequently. Majority of the respondents usually refer patients to the secondary level of care and few less than a fifth refer patients to the tertiary level of care. Meanwhile, tertiary hospitals in Nigeria have a high number of patients with cases meant for care in secondary and primary health care institutions.<sup>8</sup> The implication of this misnomer is that the tertiary institutions are overstretched, and distracted from what they should focus on. Clients too now have to spend so much time in the hospital and this is not cost effective for clients as well as the hospitals and health care workers.<sup>16</sup> It is worth noting that majority of the respondents receive referrals from the village health workers/traditional health centers. This is expected because of the positioning of the

village health/traditional health centers as they serve as the first point of care for those living in rural communities.<sup>5</sup> Furthermore, this upward referral from the village health/traditional health centres to Primary Health Care centres, is a proof that the system is acceptable and functioning.

Although majority of the respondents said they always get feedback from the receiving facility after referring patient, they do accompany their patients to the referral centres and they have a means of providing follow up for any client referred nevertheless more than half of the respondents said they do not have a telephone directory of the hospitals. Only few of the health centres have appointed staff designated to accompany patient to the referral center. This category of staff functions as linkage facilitators. This indicates that linkage facilitators are yet to be fully on ground in the local government. These indeed will affect the line of communication between

health care staff / facilities for effective referral system in this local government.

It is important to note that despite the high level of knowledge displayed by the respondents, the utilization of referral system among the respondents was poor. This probably may be due to identified perceived factors influencing the utilization of referral system. A number of factors came to fore from the respondents. A high percentage agreed that the distance from the facility is a factor that can influence the utilization of the referral system. It has been reported that approximately 30% of PHC centres in Nigeria are not within a walking distance from the community they serve and have in turn weakened the referral system in significant terms.<sup>7</sup>

Furthermore, about two-thirds of the respondents agreed that poor awareness of the health workers is another factor. This is in line with findings from a study among health care workers in Iran on barriers of referral system to health care provision which revealed that non-compliance with referral recommendations among health care workers is as a result of inadequate knowledge of referral process among health care workers.<sup>9</sup> Efficiency of the referral system was observed to be reduced by failure of health personnel to comply with referral recommendations probably due to inadequate awareness and/or knowledge of the process hence resulting inappropriate referrals.<sup>9</sup> In this study, participants agreed that availability of referral forms and other means of communications can influence utilization of referral system. Effective referral system requires good lines of communication between all the levels of health care networks. It has been discovered that there is no proper link between the PHCs and the higher level of health care system in Nigeria. Compounding this is non-availability of referral forms.<sup>7, 17</sup>

The preference of the client is another factor that was mentioned by most of the respondents as a factor that can influence utilization of the referral system. This is consistent with the findings among adult residents in Ilorin, Nigeria; which reveals that people seek health care from any facility that will meet their needs whether or not it is according to policy guidelines or the level of care sought is appropriate. It was stated that they will go to where they prefer.<sup>7</sup> In most cases this action is guided by cost implications rather than quality of service of the preferred center. It is worth noting that respondents indicated that family and social support also influence referral process. Illness in African culture is considered as a social phenomenon, as it limits participation in community life. Therefore, it is the responsibility of the family and community at large to take care of the sick. Family and community support systems in most African communities is a cultural heritage that has been a pattern of life. However, this has both positive and negative implications as decision about the management of client is not limited to the individual who is ill or is immediate family but rather decision of elders which sometimes may exclude individual concerned. This family and community support systems for the sick can promote good relationships in the family and wider community meanwhile it can also lead to emotional stress due to financial burden and delay in decision making which can result into complications on the part of the sick.<sup>11, 18</sup>

The implication of these perceived factors are poor patient care, increase mortality rate and communication gap between various levels of health care system. Therefore, efforts should be made by various health agencies, health policy and decision makers and other relevant stakeholders to improve the communication among the various levels of health care system.

This entails equipping health facilities with adequate and competent human resources as well as provision of basic materials and equipment. It is expected that there will be improvement on utilization of referral process once the identified perceived factors are addressed.

### Limitations

The findings were based on self-report; the tool used could not really validate the utilization of the referral process. Future studies may be conducted via participatory observation method in order to establish actual practice.

### Conclusion

The study revealed good knowledge but poor utilization of referral system due to factors like distance of one facility to another, social support, poor availability of referral forms and functional telephone directory. In view of this, the following recommendations will be worthwhile. Referral system should not only be on paper but must be made to function appropriately. All stakeholders are to see to its optimal level of functioning. There is need for linkage facilitators to be well integrated in the referral systems of the Local Government Area. The PHC centres should have a telephone directory of various hospitals and effective stream of communication and feedback should be put in place. Government should provide functioning ambulances to all PHC centres to facilitate better referral. It is of utmost importance that all health care workers are aware of all available and accessible referral services resources and are well knowledgeable on appropriate use of each. Comprehensive workshops on the referral system and its benefits should be organized for all health care workers which will help in its effective utilization.

**Acknowledgement:** We would like to appreciate the entire health care providers in the Primary Health Care centres of Ibadan North LGA most especially PHC Coordinator, Dr Famakin for their support. We also appreciate the assistance rendered by Nurses Ajewole Victoria and Tiamiyu Toyin in collection of data.

### REFERENCES

1. El-Sheemy HR. Referral system role in Family Medicine, 2016. [Cited 5th June, 2018]. Available from <https://www.slidesshare.net/HatemAlSheemy/referral-system.69752157>.
2. Tabish SA. Referral system in Health Care, 2010. [Cited 6th June, 2018] Available from [https://www.researchgate.net/publication/261957501\\_Referral\\_System\\_in\\_Health\\_Care](https://www.researchgate.net/publication/261957501_Referral_System_in_Health_Care)
3. President's Emergency Plan for AIDS Relief (PEPFAR) and United States Agency for International Development (USAID). Referral system assessment and monitoring toolkit, Measure Evaluation, 2013. [Cited 5th June, 2018]. Available from <https://www.measureevaluation.org/resources/publications/ms-13-60/at.../document>.
4. National Open University of Nigeria. Lecture Notes on Health Administration in Nigeria, 2016. [Cited 8th Nov. 2017]. Available from [nouredu.net/sites/.../HEM%20710-%20MAIN%20TEXT.doc%20Edithed.pdf](http://nouredu.net/sites/.../HEM%20710-%20MAIN%20TEXT.doc%20Edithed.pdf).
5. Findley SE, Afenyadu G, Okoli U, Baba H, Bature R, Mijinyawa S et al. Implications of the SURE-P MCH National Village Health Workers Experience in Northern Nigeria for the Road Map for Village Health Workers in Nigeria. *Journal of Community Medicine & Health Education* 2016; 6: 419.
6. Onwujekwe O, Onoka C, Uguru N, Nnenna T, Uzochukwu B, Eze S et al. Preferences for benefit packages for

- community-based health insurance: an exploratory study in Nigeria. *BMC Health Serv Res* 2010; 10: 162. [Cited 6th June, 2018]  
Available from: <https://www.ncbi.nlm.nih.gov/pubmed/20540787>
7. Abodunrin OL, Akande TM, Osagbemi GK. Awareness and perception toward referral in health care: A study of adult residents in Ilorin, Nigeria. *Annals of African Medicine* 2010; 9(3): 176-180.
  8. Asuke S, Ibrahim MS, Sabitu K, Asuke AU, Igbaver II, Joseph S. A comparison of referrals among primary health-care workers in urban and rural local government areas in North-Western Nigeria. *Journal of Medicine in the Tropics* 2016; 2(18): 93-97. [Cited 9th June, 2018] Available from [www.jmedtropics.org/article.asp?issn=2276-7096;year=2016;volume=18](http://www.jmedtropics.org/article.asp?issn=2276-7096;year=2016;volume=18)
  9. Eskandari M, Abbaszadeh A, Borhani F. Barriers of referral system to health care provision in rural societies in Iran. *Journal of Caring Sciences* 2013; 2(3): 229-236.
  10. Peters DH, Garg A, Bloom G, Walker DG, Brieger WR, Rahman MH. Poverty and access to health care in developing countries. *Annals of the New York Academy of Sciences* 2008; 1136(1): 161-171.
  11. Bakeera SK, Wamala SP, Galea, S, State A, Peterson S, Pariyo GW. Community perceptions and factors influencing utilization of health services in Uganda. *International Journal for Equity in Health* 2009; 8(1): 25.
  12. Welcome MO. The Nigerian health care system: Need for integrating adequate medical intelligence and surveillance systems. *Journal of Pharmacy & Bioallied Sciences* 2011; 1-45. [Cited 6th April, 2018] Available from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3249694/>
  13. Singh, AS, Masuku, MB. Sampling techniques & determination of sample size in Applied Statistics Research: An overview. *International Journal of Economics, Commerce and Management United Kingdom* 2014; 2(11): 1-22. [Cited 6th May, 2018] Available from [ijecm.co.uk/wp-content/uploads/2014/11/21131.pdf](http://ijecm.co.uk/wp-content/uploads/2014/11/21131.pdf)
  14. Araoye, MO. *Research methodology with statistics for Health and Social Sciences*. 1<sup>st</sup> Ed. Nathadex. Illorin, Nigeria. 2004; 115-129.
  15. Otovwe A, Baba A. Knowledge of referral and feedback system among health workers in Billiri Local Government Area of Gombe State, Nigeria. *European Journal of Pharmaceutical and Medical Research* 2016; 3(11): 111-115. [Cited 7th June, 2018] Available from [www.ejpmr.com](http://www.ejpmr.com)
  16. Owoseye A. Patients lament long waiting time at Nigerian hospitals as government seeks solutions, 2018. [Cited 3<sup>rd</sup> July, 2018] <https://www.premiumtimesng.com/.../258454-feature-patients-lament-long-waiting-ti...>
  17. United Nations Population Fund (UNFPA) and Women against Violence Europe (WAVE). *Strengthening health system responses to gender-based violence in Eastern Europe and Central Asia. A Resource Package, Definition of a Referral System*. UNFPA Regional Office for Eastern Europe and Central Asia and WAVE Network and European Info Centre against Violence, 2014. [Cited 6th June, 2018] Available from [eeca.unfpa.org/.../strengthening-health-system-responses-gender-based-viol](http://eeca.unfpa.org/.../strengthening-health-system-responses-gender-based-viol).
  18. Gray RS, Hahn L, Thapsuwan S, Thongcharoenchupong N. Strength and stress: Positive and negative impacts on caregivers for older adults in Thailand. *Australasian Journal of Ageing* 2016; 35(2): 7-12. [Cited 6th June, 2018] Available from <https://onlinelibrary.wiley.com/doi/pdf/10.1111/ajag.12266>