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Barriers to kidney transplants in Indonesia: a literature review

Abstract

Background: People living with chronic kidney disease will require renal dialysis or a kidney transplant to maintain life. Although Indonesia has a developing health care industry, Indonesia's kidney transplant rates are lower than comparable nations.

Purpose: The purpose of this study was to explore the health care literature to identify barriers to kidney transplants.

Methods: Health care databases were searched (CINAHL, Medline, EBSCOhostEJS, Blackwell Synergy, Web of Science, PubMed, Google Scholar and Proquest 5000) using the search terms: transplant, kidney disease, renal, dialysis, haemodialysis, Indonesia and nursing. The search was limited to English and Indonesian language data sources from 1997 to 2007. Reference lists of salient academic articles were hand searched.

Results: The results of our search identified 6 articles that met our criteria. Costs are the major barrier to kidney transplant in Indonesia, follow by cultural beliefs, perception of the law, lack of information and lack if infrastructure. In addition increased kidney disease prevention strategies are required.

Conclusions: There are many complex socio-economic, geographical, legal, cultural and religious factors that contribute to low kidney transplant rates in Indonesia. Although an increase in transplantation rates will require strategies from various agencies, health care professionals, including nurses can play a role in overcoming some barriers. Community education programs, improving their own education levels and by increasing empowerment in nursing we may contribute to improved kidney transplant rates in Indonesia.

Key Words

transplant, kidney, dialysis, Indonesia, nursing

Introduction

People living with stage 5 chronic kidney disease (CKD 5) require haemodialysis, peritoneal dialysis or transplantation to maintain life for an extended period. Transplantation is the treatment of choice as it has a lower mortality rate, improves a patient's quality of life and has cost benefits after the first year of the transplant (Davis and Delmonico, 2005, Teerawattananon et al., 2007)

In Indonesia, kidney transplantation rates are low compared to other similar developing countries. The first kidney transplant in Indonesia was performed 30 years since ago in 1977 (Markum, 2004). Ever since the transplant rates remain lower than other like countries. According to Ota (2004) there were only 247

kidney transplants performed in Indonesia between 1997 and 2001. This is low compared to other like countries such as the Philippines (1246) and Thailand (757). Importantly, in Indonesia, all kidney transplants during this period were from living related donors, not cadavers (Ota, 2004) where in other countries cadaver donor organs were permitted.

Why are kidney transplantation rates in Indonesia lower than other similar countries? What are the barriers to transplantation in Indonesia? How can these be improved? What is the role of the Indonesian nurse? These questions will be addressed through a review of healthcare literature. The purpose of this review, therefore, is to explore the literature, identify barriers to kidney transplants and offer clinical implications where nurses (and other healthcare workers) can contribute to increasing the rates of kidney transplantation and improving the quality of life of people living with kidney disease.

Background

Health care in Indonesia

Indonesia has a population of over 206 million people spread over thousands of islands (Central Bureau of Statistics 2007). It is the fourth most populous country in the world with Islam as the major religion. The average life expectancy is 67 years with an under 5 year mortality of 34 (per 1000 live births) (World Health

Organisation, 2007). These rates compare favorably to other South East Asian Nations (World Health Organisation, 2006b).

Spending on health has been increasing every year in Indonesia although in 2004 it was 2.8% of national gross domestic product (GDP). This compares with similar developing countries such as Vietnam and Cambodia who spent more than 5% of GDP on health in the same year (Economic and Social Commission for Asia and the Pacific, 2007).

Health care in Indonesia is available in both public and private hospitals (Shields and Hartati, 2003) funded by the Indonesian government. The World Bank and the International Monetary Fund (IMF) subsidize free health care services for the poorest. This is called Jaringan Pengaman Sosial Bidang Kesehatan (JPSBK) and can be used only in public hospitals (Shields and Hartati, 2003). Private hospitals are for-profit and do not receive the support from government.

There are two types of health insurance, social health insurance and commercial health insurance (Thabrany et al., 2003). Social health insurance is paid by the government and is provided to public service employees. Commercial insurance is available for private employees who work in large companies. Although private insurance is available it only makes up for 6% of health expenditure

(World Health Organisation, 2006a). This reflects the very low use of private health insurance in Indonesia.

Renal replacement therapy in Indonesia

Dialysis treatment is offered in Indonesia in both private & public hospitals. Unfortunately Indonesia does not have a well-formed renal and transplant data registry so data may not be accurate (Prodjosudjadi, 2006). It is believed that approximately 7000 people received haemodialysis treatment in 2006 (Ministry of Health of Indonesia, 2006). From the latest available South East Asian data in 2003, Indonesia has the third largest number of CKD 5 patients treated with dialysis however a very low transplant rate (Markum, 2004). Consequently, the number of patients requiring dialysis or dying from CKD 5 is increasing each year.

People living with kidney disease, whether in Indonesia or other parts of the world, suffer related co-morbid conditions affecting quality and quantity of life. Co-morbidities include cardiovascular related diseases such as ventricular hypertrophy, hypertension, atherosclerosis, and arteriosclerosis (Sarnak, 2003). In addition many patients live with renal osteodystrophy, anaemia, sleep apnoea, diabetes, anemia and alterations in calcium/phosphorus metabolism (Johnson, 2004, Eiam-Ong and Sitprija, 2002). They are often fatigued, depressed and malnourished (Abraham et al., 2003). People living with chronic kidney disease

rate their quality of life as low (Odden et al., 2006) reflecting the life changing effects kidney disease has on an individual and their families. Kidney transplantation has been shown to improve people's quality of life and can stop the progression of co-morbidities (Port et al., 1993).

Search Strategies

Aim

Our aim was to find and explore peer reviewed publications that provided information related to barriers to kidney transplantation in Indonesia.

Databases searched and key words

In 2007 we searched major academic databases (CINAHL, Medline, EBSCOhostEJS, Blackwell Synergy, Web of Science, PubMed and Proquest 5000) using the search terms: transplant, kidney disease, renal, dialysis, haemodialysis, Indonesia and nursing. Figure 1 summarizes the search process.

Inclusion and exclusion criteria

We limited the search criteria from 1997 to 2007 and to English and Indonesian language articles. Only full text articles were included. On the first search step we included full text articles that had the potential to inform our aim.

Search Results

Using the above initial criteria we found 29 full text articles. All were written in English, none in Indonesian. Both authors read each article fully to ascertain their applicability to our aim. Six articles met the criteria of informing our aim. The search yielded only one nursing article (Shields and Hartati, 2003) and five articles written by medical doctors (Markum, 2004, Prodjosudjadi, 2006, Ota, 2004, Puruhito, 1998, Sitprija, 2003).

The third step was to hand search the reference lists of the above six articles. This hand search found four potential full text articles in English. All four full-text articles were sourced and read by both authors and were excluded on the basis that they did not meet our aim. Thus, following our 3 step search process we had found six articles summarized in Table 1.

Article Methods

Two articles reported the results of targeted questionnaires. The questionnaires were targeted at leading Asian nephrologists to ascertain the kidney disease and transplant status in Asia. Both included information relevant to Indonesia's low transplant rates.

Four articles were review articles written by nursing and medical clinicians who had worked in Indonesia. The articles used previous literature, current practices, reported data and their own experience to develop their peer-reviewed publication.

Results

Results from our search supported the notion that the low rates of transplantation in Indonesia are multifactorial. The cost of dialysis and transplantation was the most reported barrier. However, there were other less economically driven influences that were reported such as cultural issues, perception of the law, a lack of accurate information and a lack of supporting infrastructure (including human resources such as specialist nurses and nephrologists). This section will discuss these.

Costs

For Indonesians with CKD 5, renal replacement therapy such as haemodialysis and transplantation is considered an expensive treatment. The cost of haemodialysis varies from US\$4900-6500 per year depending on the facility (Prodjosudjadi, 2006). This is expensive when you consider the average Indonesian earns US\$1,280 per year (Central Bureau of Statistics 2007). Therefore, one year's dialysis is equal to 5 years of the average Indonesian wage.

In Indonesia a kidney transplant costs approximately US\$15,000 for the first year (Prodjosudjadi, 2006) and significantly decreases after year 1. Since there is no health insurance that covers the high transplantation fee, it is problematic for most Indonesians to afford a transplant. The transplant is the equivalent of 15 years pay while the cost of post-transplant immunosuppressive drugs can be more than the average yearly salary (Burung Manyar Foundation, 2003). Thus, the majority of Indonesians find the costs of transplantation very high.

Lack of health insurance appears to be a significant barrier to transplantation in Indonesia; 85% of the population does not have health insurance (Thabrany et al., 2003) and thus can not afford the costs. Haemodialysis is covered by some health insurances, including insurance for the very poor. However, no health insurance covers the kidney transplantation fee (Arifianto et al., 2005). It may appear reasonable that the government does not prioritize CKD 5 treatment through health insurance funds.

Culture and religion

Traditional cultural aspects, particularly religion, are highly valued by many Indonesians. 88% of all Indonesians consider themselves as practicing Moslems with another 8% classified as Christian (Economic and Social Commission for Asia and the Pacific, 2007).

The literature supports the notion that cultural and religious interpretation related to organ donation is a barrier to increasing rates. Although an official consensus in 1995 agreed that that all religions in Indonesia accepted organ transplantation there is still significant resistance among both Moslem and Christian Indonesians (Markum, 2004). This results in only donor kidneys coming from living relatives (Prodjosudjadi, 2006). The very low use of kidneys coming from brain-dead sources (cadavers) limits the supply of donor kidneys and limits transplant rates. In comparable countries such as the Philippines and Thailand cadaver kidneys have been a large source of kidney donation (Ota, 2004).

Moslems may remain uncertain regarding organ transplantation which inhibits people from receiving organ transplantation (Aasi, 2003). There is the notion that breaking the bone of a dead person is equal in sinfulness and aggression to breaking it while a person is alive. Conversely, kidney donation uncertainty is not so apparent in other Islamic nations. There are high transplant rates in countries such as Turkey (Bilgel et al., 2004), Saudi Arabia (Mani, 2002), Iran (Broumand, 1997) and Malaysia (D'Cruz and Chandrasekharan, 2002). Subsequently there have been efforts to clarify Islamic interpretations of organ transplantation. These efforts have been led by the Middle East Society for Organ Transplantation (MESOT). Twenty nine Moslem countries in the world

participating in this organization, such as Iran, Turkey, Pakistan have increased transplant rates significantly since the year 2000 (Shaheen and Souqiyeh, 2004). These findings suggest that the resistance to the use of cadaver organs in Indonesia is more an interpretation of their religious and cultural beliefs and values that differ from other Islamic nations.

Law

Legislation around organ donation in Indonesia is not widely understood (Markum, 2004). There have been few well-known and understood legal process for donating an organ. An example of this is the debate around the law which prohibits a transplant using an organ from an unknown donor. If the donor's confidentiality is maintained then the recipient does not know the source of the organ. Thus, it is argued that it may not be acceptable to use organ from cadaver (Aasi, 2003).

There is a general worldwide lack of understanding among non-health professionals regarding the diagnosis of brain death. Markum (2004) reports that this is no different in Indonesia where misconceptions can be held over the process of brain death determination and the transplant process that follows. Improvement in these processes as has been the case in Spain (Miranda et al., 1999) and Iran (Zargoosh, 2001) can improve transplant rates. It is important to

note however, that these two countries have very different wealth profiles and health systems than Indonesia.

Lack of information

Lack of information about organ donation could contribute the low number of donations and may require education to address such fears (Markum, 2004). This leads to lack of information regarding the limited availability of donor organs in Indonesia. Furthermore, insufficient information in the community can lead to misconceptions related to live donor transplantation. Living with one kidney can be an unsettling fear in the community and may require education to address such fears. Indonesians believe that kidney donation can affect their daily lives adversely (Markum, 2004) contributing further to the lack of donors. This, will only be addressed by a very large targeted government education program utilizing health care worker and community workers to allay misconceptions related to kidney donation.

Infrastructure factors

Low kidney transplant rates are certainly related to a lack of infrastructure, inadequate transplant data registry, inadequate number of skilled practitioners & a lack of transplant centers. A fundamental method of data collection is vital for further development of quality dialysis and transplant practices (Markum, 2004, Prodjosudjadi, 2006, Ota, 2004). Data collection registries are important for local,

national and international comparisons which lead to improved practices and improved patient outcomes (Schena, 2000). The absence of a high quality transplant registry in Indonesia is a consistent recommendation from our findings.

A shortage of specialist nephrologists, transplantation facilities and most likely, specialist nephrology nurses contribute to the low kidney transplant rates (Prodjosudjadi, 2006). Indonesia has a much lower rate of nephrologists compared to other Asian countries (Sitprija, 2003). Indonesia's 43 nephrologists compares poorly with Thailand where the number of nephrologists in 2003 (the most recent accessible data) was 268. The population of Thailand is one fifth of Indonesia's. Philippines had 155 nephrologists and Vietnam had 60 nephrologists (Sitprija, 2003) which are both much higher ratios than Indonesia's. Along with Myanmar, Indonesia has the lowest number of nephrologists per patient population in South East Asia (Sitprija, 2003). Although no data on shortages of specialty nephrology nurses could be found through peer-reviewed or government sources the low rates of tertiary educated nurses (Shields and Hartati, 2003) suggest advanced nephrology nurses would be scarce. No evidence of formal specialist nephrology nurse education was found.

Distance to access kidney care centres is a major factor contributing the low transplantation rates (Churak, 2005). Transplant facilities are available in only a

few centres in Indonesia and most are found on the island of Java. In 2004, there were only 10 hospitals in Indonesia who were able to perform organ transplantation (Markum, 2004). Only one of those hospitals is located in Sumatra (the second most populated island), while the other nine are in Java (Prodjosudjadi, 2006). Thus, the patients who live in remote areas or on poorly accessed islands are limited by transportation and higher costs. These people also have difficulty accessing dialysis treatment and this contributes further to their inability to access transplantation information and resources. This ultimately leads to death from a disease that is highly treatable.

Discussion

Although the health care needs of developing countries such as Indonesia are different than developed nations there are some similarities that are important to this discussion. In both developing and developed nations kidney disease epidemiology and clinical features are similar (Luvira et al., 1998), transplantation has lower mortality rates (Port et al., 1993) and transplantation has improved quality of life outcomes (Cameron et al., 2000). Thus, low transplant rates lead to poorer outcomes for those living with CKD 5 whether in Indonesia or other nations.

Given the high costs of transplantation and the competing health priorities in Indonesia the encouragement of expensive treatments such as kidney transplants

may be questionable. The International Council of Nurses' (ICN) statement relating to developing countries promotes "the attain(ment of) a level of health that will permit them to lead a socially and economically productive life" (International Council of Nurses, 2000). This starting point to the ethics of kidney transplantation in Indonesia leads to fundamental healthcare ethical principles such as autonomy, beneficence, non-maleficence and justice as well as ethical consequentialist or utilitarian approaches (Kerridge et al., 2005). Most developing nations accept organ donation on the ethical grounds related to consequentialist (the consequences of the intervention will be good) and beneficence (beneficial) grounds. The consequences of organ donation, ie. the donated kidney being used to improve a person's health status rather than the kidney not being used, is an ethical perspective that supports organ transplantation. In addition, the ethical principle of beneficence where the transplant benefits the individual without detrimental effects is an ethical principle that supports organ transplantation.

Conversely, the notion that providing financial resources for kidney transplantation at the expense of other health care needs may not be beneficent to the majority of Indonesians. Markum (2004) suggested that more dialogue with health insurance agencies highlighting the savings of kidney transplants over dialysis is needed. Even so, the utilitarian argument favoring all Indonesians may not be consistent with the ICN's commitment to sustainable

programs which is incorporated in its 1998 vision statement (International Council of Nurses, 1998). Therefore, in a developing country with competing healthcare resources, the question of health for the greatest good may be in question when it comes to sustaining expensive kidney transplant programs. This is also complicated by the individual and cultural ethical beliefs which are influenced by religion, education, gender, law and social status (Tschudin, 2003). The cultural beliefs in Indonesia thus influence the ethical beliefs that they hold. This in turn may influence their reluctance to accepting or donating an organ and may limit transplant rates exacerbating the low transplant rates that already exist in Indonesia.

Discussion of kidney transplantation in the context of wider renal healthcare is necessary here. Prevention of kidney disease is more desirable than treatments such as dialysis and transplantation and should be the target of developing countries (Hafez et al., 2006, Prodjosudjadi, 2006). Although this is a desirable target, there have been few studies supporting the successful implementation of mass screening to reduce kidney disease (Johnson, 2004). Although there has been evidence of successful programs in selected populations (Hoy et al., 2000) there is still much debate on the best screening methods and whether they are actually cost-effective (Hallan et al., 2006). Nwankwo (2006) supports the notion of untargeted general population kidney disease screening in developing countries. This has been taken up to some extent through Indonesia's National

Kidney Foundation's Early Detection Program (National Kidney Foundation of Indonesia, 2008). In saying this there is still a need for greater research to inform the balance of prevention and treatment in order to contribute to the best use of Indonesia's limited health care resources.

Nursing practice implications

What can nurses do, if anything, to contribute to improved kidney transplantation rates in Indonesia? Given that there are many contributing factors how can nurses possibly contribute? We believe that a response to this is not to declare the "situation impossible" but to suggest some ways in which nurses in Indonesia may contribute. These will be discussed under the headings of increased community education, nurse education and nurse empowerment.

Community education

Lack of awareness of kidney disease (causes, prevention, transplant issues) could be associated with low kidney donation rates in Indonesia. A study conducted by Gaston (2005) verified that early education to CKD 5 patients about transplantation and early referral to a transplant center can increase the access to transplantation rates. Participation by nurses may improve transplant rates by educating patients and their families' communities about kidney disease, prevention and treatment. This includes pre-transplant procedures. Discussion

around the impact living with one kidney, legal aspects and support mechanisms are important for a person to decide to donate or receive a kidney.

There is evidence that discussion around prevention and health promotion in the community is already being encouraged (Prodjosudjadi, 2006). Some Indonesian health professionals and advocates have been involved in World Kidney Day in Indonesia (National Kidney Foundation of Indonesia, 2008a). We propose that nurses may play an important role in the prevention of CKD and the increase in transplant rates to improve quality of life of people living with kidney disease in Indonesia.

Nurse education

The low rate of university prepared nurses can be recognized as a major contributing factor to low levels of health and high mortality (Shields and Hartati, 2003). These low rates can specifically impact on restricting the roles of nurses at all levels of healthcare. In the area of kidney disease nurses can be involved at the primary through to the tertiary stages of care (Bonner, 2003). In the community, nurses can contribute to preventing kidney disease by being involved in blood pressure, diabetes and kidney disease screening programs. In addition they can encourage stakeholders to discuss their understanding of the

benefits of organ donation. Intensive care, theatre and transplant coordinator nurses in the tertiary context can play a role in the logistical aspects to improve donation practices. We agree with Shields and Hartati (2003) that educated nurses can help to increase the quality of health care in Indonesia, specifically the healthcare of Indonesians living with kidney disease. With further development of tertiary education for nurses, a shift in attitudes is occurring (Shields and Hartati, 2003). More educated nurses can bring higher standards of care resulting in improved outcomes for patients. This may lead to better education of patients, community, and an improved understanding of the value of both disease prevention and organ transplantation.

Nurse empowerment

To improve the nation's health, nurses can contribute in health policy and public policy (Rains, 2001). In making health care policies, governments can not make the policies according their own needs; they need the health professionals who are involved in practice settings so the policies can benefit all. Nurses' participation in policy making plays an important role (Cherry and Jacob, 2005).

In 2003 (the latest available figures in Indonesia), the number of nurses was 135,705 with the density of 6.2 nurses per 1,000 population (Ministry of Health of Indonesia, 2006). Although they are a major resource nurses are still considered

as non-professional (Shields and Hartati, 2003). Nurses' stigma as doctor's maid or doctor's helper is still strongly believed in community.

In Indonesia, nurses are hesitant to talk about change because it is usually associated with a negative attitude or a bad impression. Mason & Talbott (1985) stated that politics may not be acceptable for nurses because it is related to dirty games and not related to the Florence Nightingale image of the traditional helping nurse. Although this can be viewed as a dated opinion this view can certainly be relevant to Indonesia today. There are certainly major differences between the education preparation of medical doctors and nurses in Indonesia (Shields and Hartati, 2003).

An increase in the educational quality of nurses will contribute to an increased professionalism. Nurses can be the advocates and speak for the patients, families, communities needs or those who need care but have limited power (Gebbie et al., 2000). People with kidney disease would benefit from increase nursing professionalism and education quality. Nurses can give their voices to help CKD patients continue their lives.

In Indonesia, there is still no well communicated policy ruling relating to organ donors. Davies (2004) suggests that nurses can be messengers to pass the message to the politicians and community, speak to the media and influence

policy makers. Nurses can cooperate with other medical professionals to increase the low transplantation rate. Furthermore empowered nurses are in a position to lobby for a greater percent of GDP to be spent on health so CKD patients can be supported to have an improved therapy and improved health outcomes.

International Relevance

Barriers to transplantation in Indonesia have been the focus of this literature review. Although the context is Indonesia which has many complex and unique features, aspects of our findings may be relevant to other nations and thus have international relevance. Aspects featured in this review such as costs, cultural, religious, data and information, infrastructure, geography, nursing's role in community awareness, nursing education and nursing empowerment may have relevance to other health care issues in other nations.

Study Limitations

There were several limitations to this review. Given the rapid development of many parts of Indonesia the process of literature review may have not identified important recent changes that may be

occurring. In addition limited registry data was available. Furthermore this review was limited to studying Indonesia and comparisons with Indonesia's immediate neighbors. Although we have suggested that our findings may be applicable to other nations we have no way of being able to generalize these findings given the review was geographically specific. In saying this, the finding that it is not just cost alone that prevents increased donation rates may be applicable to other nations.

Conclusion

Worldwide, kidney transplantation is the treatment of choice for most people suffering from CKD 5. The results of our review of the literature identified that Indonesia's transplant rates are much lower than other comparable countries. Furthermore there is a paucity of literature addressing low kidney transplant rates in Indonesia in both Indonesian and English language literature. The literature that was found identified costs as the major barrier to kidney transplant in Indonesia followed by cultural and religious beliefs, perception of the law and poor infrastructure related to kidney transplant requirements. We believe there is great potential in Indonesia for empowered, educated nurses to

lower some of these barriers and contribute to quality healthcare practices for people living with kidney disease.

References

- Aasi, G. (2003) Islamic Legal and Ethical Views on Organ Transplantation and donation. *Zygon*, **38** (3), 725-734.
- Abraham, G., Varsha, P., Mathew, M., Sairam, V. & Gupta, A. (2003) Malnutrition and nutritional therapy of chronic kidney disease in developing countries: The Asian perspective. *Advances in renal replacement therapy*, **10** (3), 213-221.
- Arifianto, A., Marianti, R. & et al (2005) Menyediakan layanan efektif bagi kaum miskin di Indonesia: laporan mekanisme pembiayaan kesehatan (JPK-GAKIN) di kabupaten Jawa Tengah. Lembaga Penelitian Smeru, Purbalingga.
- Bilgel, H., Sadikoglu, G., Smith, R. & Jones, T. (2004) A survey of the public attitudes towards organ donation in Turkish community and of the changes that have taken place in the last 12 years. *Transplantation International*, **17** (3), 126-130.
- Bonner, A. (2003) Recognition of Expertise: An important concept in the acquisition of nephrology nursing expertise. *Nursing and Health Sciences*, **5**, 123-131.
- Broumand, B. (1997) Living donors: the Iran experience. *Nephrology Dialysis Transplant*, **12** (9), 1830-1831.
- Burung Manyar Foundation. (2003) *Burung Manyar Foundation*. Burung Manyar Foundation, Zaltbommel, Netherlands. Available <http://www.burungmanyar.nl/en/>. (accessed 14th April 2008 2008).
- Cameron, J., Whiteside, C., Katz, J. & Devins, G. (2000) Differences in quality of life across renal replacement therapies : A meta-analytic comparison. *American Journal of Kidney Diseases*, **35** (4), 629-637.
- Central Bureau of Statistics (2007) *Statistics Indonesia*. Available <http://www.bps.go.id/sector/population/tables.shtml>. (accessed April 09, 2007).
- Cherry, B. & Jacob, S. (2005) *Contemporary Nursing: issues, trends, management*. Elsevier Mosby, Missouri.
- Churak, J. (2005) Racial and Ethnic Disparities in Renal Transplantation. *Journal of the National Medical Association*, **97** (2), 153-160.
- D'Cruz, F. & Chandrasekharan, N. (2002) *RENAL DISEASE IN MALAYSIA : PROBLEMS AND PROSPECTS*. Available http://www.mma.org.my/info/2_renal_90.htm. (accessed 21 March 2007).
- Davies, C. (2004) Political leadership and the politics of Nursing. *Journal of Nursing Management*, **12**, 235-241.
- Davis, C. & Delmonico, F. (2005) Living donor kidney transplantation; a review of the current practices fo the live donor. *American Society of Nephrology*, **16** (7), 2098-2110.
- Economic and Social Commission for Asia and the Pacific (2007) *Statistical Yearbook for Asia and the Pacific*. United Nations, New York.

- Eiam-Ong, S. & Sitprija, V. (2002) Comorbidities in Patients with End-Stage Renal Disease in Developing Countries. *Artificial Organs*, **26** (9), 753-756.
- Gaston, R. (2005) Improving Access to Renal Transplantation. *Seminars in Dialysis*, **18** (6), 482-486.
- Gebbie, K. M., Wakefield, M. & Karlene, K. (2000) Nursing and Health Policy. *Journal of Nursing Scholarship*, **32** (3), 307-315.
- Hafez, M., Abdellatif, D. & Elkhatib, M. (2006) Prevention of Renal Disease Progression and Renal Replacement Therapy in Emerging Countries. *Artificial Organs*, **30** (7), 501-509.
- Hallan, S., Dahl, K., Oien, C., Grootendorst, D., Aasberg, A., Holmen, J. & Dekker, F. (2006) Screening strategies for chronic kidney disease in the general population: follow-up of cross sectional health survey. *British Medical Journal*, **333** (1), 1047-1052.
- Hoy, W., Baker, P., Kelly, A. & Wang, Z. (2000) Reducing premature death and renal failure in Australian Aboriginals. *Medical Journal of Australia*, **172** (10), 473-478.
- International Council of Nurses. (1998) *ICN's Vision For the Future of Nursing*. International Council of Nurses, Geneva. Available <http://www.icn.ch/visionstatement.htm>. (accessed 14th April 2008).
- International Council of Nurses. (2000) *Position Statement: Nursing and Development*. International Council of Nurses, Geneva. Available http://www.icn.ch/psnursingdevel_00.htm. (accessed 14th April 2008).
- Johnson, D. (2004) Evidence-based guide to slowing the progression of early renal insufficiency. *Internal Medicine Journal*, **34** (1-2), 50.
- Kerridge, I., Lowe, M. & McPhee, J. (2005) *Ethics and law for the health professions*. The Federation Press, Sydney.
- Luvira, U., Sukahatya, M., Alano, F., Danguilan, R., Thang, N., Lin, C., Lee, G., Morad, Z. & Thirakhupt, P. (1998) Clinical features of renal diseases in South-East Asia. *Nephrology*, **4** (s2), S9-S11.
- Mani, M. (2002) Development of cadaver renal transplantation in India. *Nephrology*, **7** (4), 177-182.
- Markum, H. (2004) Renal Transplantation Problem in Indonesia. *Acta med Indonesia*, **36** (3), 184-186.
- Mason, D. & Talbott, S. (1985) *Political Action Handbook for Nurses*. Addison Wesley, California.
- Ministry of Health of Indonesia. (2006) *Pelayanan Medik*. Jakarta. Available www.depkes.go.id. (accessed 31st May, 2007).
- Miranda, B., Alvarez, I., Cuende, N., Naya, M. & de Felipe, C. (1999) Update on organ donation in Spain. *Nephrology Dialysis Transplant*, **14** (S3), 15-21.
- National Kidney Foundation of Indonesia. (2008a) *Indonesia World Kidney Day*. Jakarta. Available <http://www.associationhq.com/wkd2/UserFiles/File/Indonesia%20World%20Kidney%20Day%202008.pdf>. (accessed 15 April 2008).
- Nwankwo, E. (2006) Response to "Effective Screening strategy ought to be adaptable to the type of community". *British Medical Journal*, **333** (1), 1047-1052.

- Odden, M., MA, W. & Shlipak, M. (2006) Depression, Stress, and Quality of Life in Persons with Chronic Kidney Disease: The Heart and Soul Study. *Nephron Clin Pract*, **103** (1), c1-c7.
- Ota, K. (2004) Current status of organ transplants in Asian countries. *Transplantation Proceedings*, **36** (9), 2535-2538.
- Port, F., Wolfe, R., Mauger, E., Berling, D. & Jiang, K. (1993) Comparison of survival probabilities for dialysis patients vs cadaveric renal transplant recipients. *JAMA*, **270** (11), 1339-1343.
- Prodjosudjadi, W. (2006) Incidence, Prevalence, Treatment and Cost of End-Stage Renal Disease. *Ethnicity & Disease*, **16** (1), 14-16.
- Puruhito (1998) Availability and Limits of Intermediate Cardiovascular Technology. *Artificial Organs*, **22** (3), 237-242.
- Rains, J. (2001) Developing Political Competence: A Comparative Study Across Disciplines. *Public Health Nursing*, **18** (4), 219-224.
- Sarnak, M. (2003) Cardiovascular complications in chronic kidney disease. *American Journal of Kidney Diseases*, **41** (S5), S11-S17.
- Schena, F. (2000) Epidemiology of end-stage renal disease: International comparisons of renal replacement therapy. *Kidney Int*, **57** (S74), S39-S45.
- Shaheen, F. & Souqiyyeh, M. (2004) How to improve organ donation in the MESOT countries. *Annals of Transplantation*, **9** (1), 19-21.
- Shields, L. & Hartati, L. (2003) Nursing and health care in Indonesia. *Journal of Advanced Nursing*, **44** (2), 209-216.
- Sitprija, V. (2003) Nephrology in South East Asia : Fact and Concepts. *Kidney International*, **63** (83), 128-130.
- Teerawattananon, Y., Mugford, M. & et al (2007) Economic evaluation of palliative management versus peritoneal dialysis and hemodialysis for end stage renal disease: evidence for coverage decisions in Thailand. *International Society for Pharmacoeconomics and Outcomes Research*, **10** (1).
- Thabrany, H., Gani, A. & et al (2003) Social Health Insurance In Indonesia: Current Status and The Plan for National Health Insurance. Jakarta.
- Tschudin, V. (2003) *Approaches to Ethics*. Butterworth Heinemann, London.
- World Health Organisation. (2006a) *Core Health Care Indicators - Indonesia*. World Health Organisation, Geneva. Available http://www.who.int/whosis/database/core/core_select_process.cfm?country=idn&indicators=nha. (accessed 14th April 2008 2008).
- World Health Organisation. (2006b) *Mortality Country Fact Sheet: Indonesia*. World Health Organisation, Geneva. Available http://www.who.int/whosis/mort/profiles/mort_searo_idn_indonesia.pdf. (accessed 14th April 2008 2008).
- World Health Organisation. (2007) *Immunization Profile - Indonesia* World Health Organisation, Geneva. Available <http://www.who.int/vaccines/globalsummary/immunization/countryprofileresult.cfm?C=idn>. (accessed 14th April 2008 2008).
- Zargoosh, J. (2001) Iranian kidney donors: motivations and relations with recipients. *J Urol*, **165** (2), 386- 392.

Table 1. Summary of peer-reviewed journal articles informing barriers to kidney transplantation in Indonesia

Author (Year)	Country (Language)	Aim	Methods	Findings	Importance to Indonesian kidney transplant rates
Prodjosudjadi (2006)	Indonesia (English)	<ul style="list-style-type: none"> Summarise incidence, prevalence and cost of CKD 5 in Indonesia 	<ul style="list-style-type: none"> Questionnaire to targeted key Indonesian nephrology centres 	<ul style="list-style-type: none"> Dialysis and transplantation costs too high for most Indonesians Transplant rates low 	<ul style="list-style-type: none"> The quantity and quality of human and material resources for kidney transplantation need upgrading More emphasis on prevention than cure Needs improved data management
Markum (2004)	Indonesia (English)	<ul style="list-style-type: none"> Summarise Indonesian kidney transplant barriers 	<ul style="list-style-type: none"> Review 	<ul style="list-style-type: none"> Barriers to transplants are cost, infrastructure, religion, custom and donor availability 	<ul style="list-style-type: none"> Needs improved data management Needs improved health insurance Improved understanding of definition of death
Ota (2004)	Japan (English)	<ul style="list-style-type: none"> Summarise Asian transplant and dialysis status 	<ul style="list-style-type: none"> Questionnaire to targeted key national leaders 	<ul style="list-style-type: none"> Asian dialysis and transplant practices vary widely. Data registries vary widely. 	<ul style="list-style-type: none"> Indonesian dialysis and transplant data is difficult to access. 247 kidney donations performed from 1997 to 2001 All were living related
Shields (2003)	Indonesia/Ireland (English)	<ul style="list-style-type: none"> Describe nursing in Indonesia 	<ul style="list-style-type: none"> Review 	<ul style="list-style-type: none"> Indonesian nursing is low status In 2003 Indonesia is developing a registration board, standardized accreditation and increased tertiary nurse education 	<ul style="list-style-type: none"> Appropriate nurse education and improving nursing standards will improve health standards
Sitprija (2003)	Thailand (English)	<ul style="list-style-type: none"> Describe medical care of kidney disease in South East Asia 	<ul style="list-style-type: none"> Review 	<ul style="list-style-type: none"> Workforce and clinical treatment are not adequate in many South East Asian countries 	<ul style="list-style-type: none"> Prevention strategies required Provision of appropriate health services within economic and technological constraints
Puruhito (1998)	Indonesia (English)	<ul style="list-style-type: none"> Address barriers to transplant 	<ul style="list-style-type: none"> Review 	<ul style="list-style-type: none"> The availability of technology has stimulated religious, cultural and economic barriers to transplantation 	<ul style="list-style-type: none"> Needs improved health insurance Cost versus benefit analyses required

Figure 1. Search strategy

