A LITERATURE REVIEW ON SKEWED SEX RATIO AT BIRTH IN VIETNAM AND SOUTH KOREA

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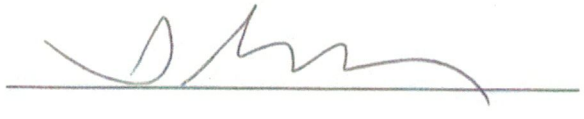

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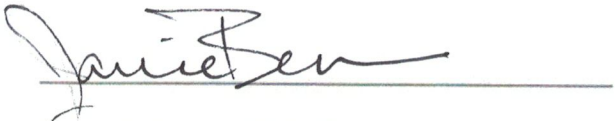

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TABLE OF CONTENTS

ABSTRACT

An imbalance of the Sex Ratio at Birth (SRB) in Vietnam has emerged since the early 2000s. The number of males born compared to females has reached unstable levels reflecting a discrimination against girls that threatens the country's population with negative consequences. South Korea is the only country that has experienced skewed SRB and has been able to reverse its national levels back to stability. There is a lack of material in the literature of a direct comparison of Vietnam and South Korea. This paper reviews existing articles on the contributing factors of SRB that include primarily son preference, prenatal sex selective practices and low fertility. It also aims to assess South Korea's approaches in solving its SRB crisis in order to inform recommendations to improve Vietnam's strategy to combat this health problem. Quantitative studies in the literature reveal the magnitude of the problem. There is a lesser amount of qualitative research that sheds light on the underlying reasons of unusual SRB that is rooted in patriarchal kinship systems, which fuels son preference. South Korea's political will, acceptability of a bilateral kinship system and normative changes on how children are viewed serves as an example of how Vietnam can return to appropriate SRB levels.

INTRODUCTION & BACKGROUND

The sex ratio of a population serves as a demographic indicator and reflects the gender composition of a population. It is not to be confused with Sex Ratio at Birth (SRB), which is defined as the number of males born per one hundred females.[1] The human biological standard for SRB is typically between 104-106 boys per 100 girls.[1,2] Generally, the ratio remains at this level throughout geographical regions, continents, nations and peoples. If there is any substantial variation from this ratio, to some degree it indicates that there has been deliberate action impacting this natural number.[3] SRB is one indicator of gender equality, cultural customs, socioeconomic development, welfare and political and health practices.[1]

SRB in particular Asian countries have become disrupted at an increasingly alarming rate.[1,2] Patterns have shifted over time with distorted SRB emerging in China, India and South Korea in the 1980s. Other nations in different world regions such as Azerbaijan, Armenia and Georgia began exhibiting SRB distortions in the 1990s and the latest have been countries such as Montenegro, Albania and Vietnam.[4] Vietnam began showing characteristics of imbalances in the previous decade and its national average SRB has continuously worsened over the years, jumping from 105.2 in 1999 to 112.2 in 2014.[5,6] The start of Vietnam's SRB phenomenon surfaced in the early 2000s, which was approximately around the time that South Korea's unbalanced national SRB successfully reverted to stable levels after reaching 115.[7] The reasons why SRBs that favor males manifest is not due to one social or economic factor.[8] This paper's objectives are to 1) understand the current situation and causes of SRB in Vietnam and South Korea, 2) assess how skewed SRB reversed in South Korea in order to inform recommendations for Vietnam, 3) analyze the available literature for both and identify gaps to provide suggestions for future research.

WHY VIETNAM AND SOUTH KOREA?

Vietnam and South Korea have been strategically selected for review over other countries for a variety of reasons. Asian nations such as China or India have been well recognized for distorted SRB levels.[9] However, South Korea is known as the first country to report high national SRB and successfully lower it.[10] The relatively recent emergence of a skewed SRB in Vietnam demonstrates its earlier stages in this phenomenon and the need for implementing strategies early to reverse the problem before it worsens. The rapid increase exhibited by Vietnam is greater than that of South Korea and China in the 1980s.[11] Prompt intervention before the situation greatly deteriorates can soften the severity of ramifications that would be felt by the country. Vietnam's SRB conflict has the potential to affect the country's population deeply.[1] Aside from China and South Korea, other East Asian countries in the area such as Japan, Thailand and Indonesia are not enduring SRB issues. However, this is not true for Vietnam and it has attracted the attention of many in the field.[12]

The consequences that are expected for Vietnam if SRB does not return to normal are many. If the SRB level continues to climb, negative impacts on family structures and the marriage market due to a deficit of females and excess amount of males are expected.[1,9,2] The aftermath resulting from SRB disruptions are typically felt about two decades later among young adults.[12] There is also a cumulative impact across generations, females may face higher pressure to marry younger and numbers of divorces and re-marriages heighten.[1,2] Postponed marriages among males and higher incidences of male singlehood are also foreseeable with many men who may never be able to marry.[1,9] This is detrimental on family systems as men are expected to carry on the traditional patriarchal family. If they are unable to do so because of a shortage of potential brides it can cause great social strain.[9] It is anticipated that the prevalence of gender-

based violence, the trafficking of women and the demand for sex work will augment.[1,9,2] A lack of women in society is also an endangerment to the improvement of their status.[1] Evidence based action to address this dilemma and prevent the country from facing such serious issues is vital. With several similarities between Vietnam and South Korea an analysis of the latter's successful case can provide useful insight for Vietnam.

SEARCH STRATEGY

The identification of sources in the literature was achieved through using the following search criteria: 1) items published from 2000 to 2016 for Vietnam and 1985 to 2016 for South Korea, 2) studies on SRB or its contributing factors: son preference, prenatal sex selective practices and low fertility. Sources for Vietnam were selected from the years 2000 to 2016 due to Vietnam's emerging SRB starting in the early 2000s. Nearly all studies on this topic fall within this time period. South Korea's SRB dilemma was reported in the middle of the 1980s. Thus, articles that were identified were published from 1985 to 2016.

Sources were obtained from the electronic databases of PubMed, EBSCOhost Global Health and Scopus. All three databases were used to search for many different variations of the following keywords: Vietnam, South Korea, sex ratio at birth, sex trends, gender imbalance, low fertility, male surplus, female deficit, son preference and sex selective technology and practices.

VIETNAM

CURRENT SITUATION

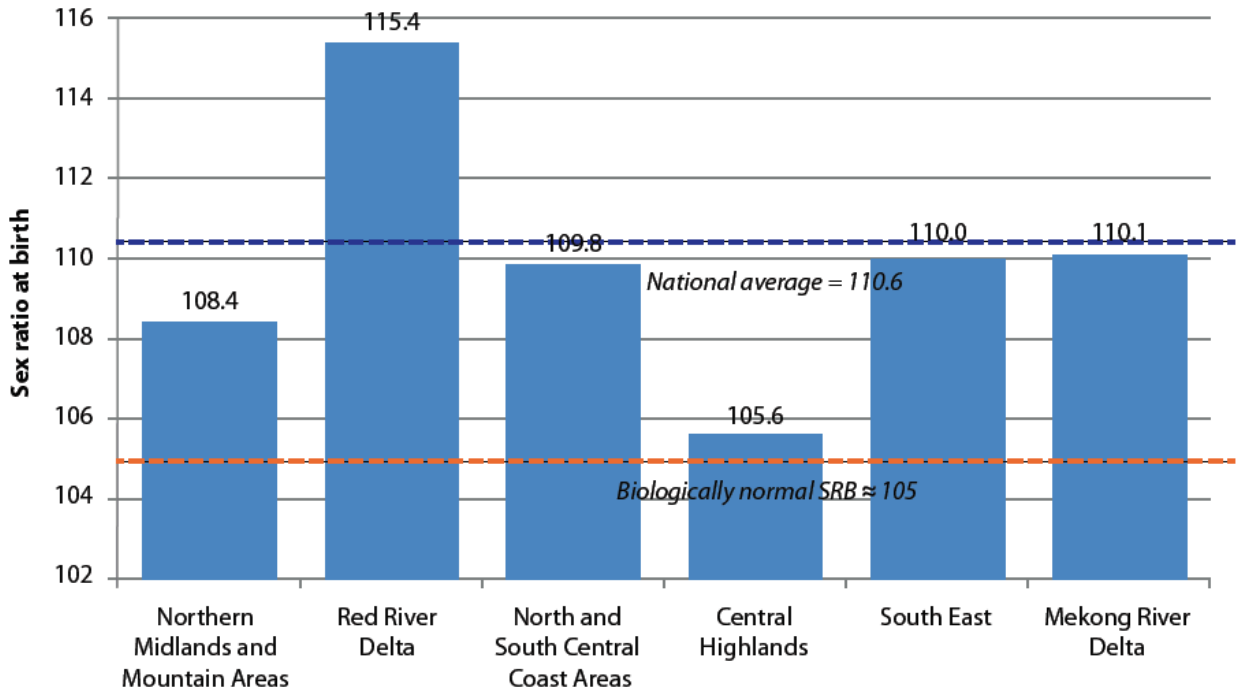
The outset of skewed SRB in Vietnam started in the early 2000s.[1,9,2] In the 1999 Population and Housing Census, the national SRB was 105.2 and was stable in the majority of

the country's provinces.[5] Since then it has climbed at a steady rate of what is equivalent to 1 SRB point each year.[1,2,11] The national SRB in 2000-2001 was 105 to 106.2,[2,11] 108 in 2005 and climbed to 111 to 112 in 2006 and 2007.[9,11] Other sources report different but similar numbers such as the Viet Nam National Population Housing Census, which reports a SRB of 110.6 for the year 2009.[13] It rose to 112.2 in 2014 according to the Intercensal Population and Housing Survey.[6] According to the 2014 Vietnam Multiple Indicator Cluster Survey, the SRB was higher among females who gave birth who were ages 15 to 29.[14] Such continuous disruption in the SRB is not likely to affect Vietnam before 2025. However, the imbalanced SRB has already resulted in an excess of males in the population.[1] An approximate 25,000 girls were reported missing in 2006 from Vietnam's statistics.[15]

There are great differences of SRB in the nation at the provincial and regional levels. In the Central Highlands the SRB is stable but in other areas it reaches up to 115 or 120. SRB is highest in mostly rural regions and especially northern areas like the Red River Delta.[16] National data sources utilized to measure SRB put forth consistent results that the Red River Delta area has unusually high numbers.[9,17] The Red River Delta in northern Vietnam is known as the "hot spot" of unbalanced SRB.[11,18] These hot spot provinces exhibit approximate SRB levels from 112 to 124.[13,16,17,19] The provinces consist of those such as Bac Giang, Bac Ninh, Hai Duong and Hung Yen.[19] Hung Yen, which has an estimated SRB of 124 is an agricultural, densely populated and mostly rural area situated in the center of the Red River Delta between the city of Hai Phong and Hanoi.[11,19] It has experienced a lot of growth due to the economic changes during the country's post-reform.[11] Vietnam’s economic development is seen in its GDP increase as it was less than 200 USD in 1989 and in 2010 reached 1,224 USD, reaching middle income status and gaining recognition as one of the best performing economies worldwide.[18] Hung Yen’s

neighboring provinces also report SRBs higher than 110.[11] However, the actual cities of Hanoi and Hai Phong report SRB below 110.[11]

Figure 1. Sex Ratio at Birth by Region, Vietnam 2009



Source: Ministry of Planning and Investment General Statistics Office. Sex Ratio at Birth in Vietnam: New Evidence on Patterns, Trends and Differentials; 2011. Available at http://www.demographie.net/guilmoto/pdf/CensusMonographSexRatioatBirth.pdf.

In provinces where SRB have been studied, it has been revealed through qualitative interviews that health providers and local leaders are aware of the long-term ramifications of skewed SRB.[8] Among the public while there was a general knowledge of SRB there seemed to be a lack of concern of its long-term repercussions.[8]

CAUSES OF SRB

Studies have revealed the underlying factors that contribute to unbalanced SRB as well as its primary cause. The root cause is the patriarchal kinship system that has established a foundation where son preference has flourished with this desire to bear a son being exacerbated by other variables, specifically the availability of prenatal sex selective practices and low fertility.[1,11,14,16]

Son Preference

Son preference is defined as the desire to have at least one son.[19] The desire for a son can exist among communities regardless of occupation, age, marital status and residence, though it is more prevalent in rural regions.[8] In a United Nations Population Fund (UNFPA) study with a sample population of 1,424, a total of 69% of Vietnamese men believe that sons are significant in continuing family lineage.[19] Approximately three quarters of men, expressed moderate levels of son preference and around one third of men expressed high son preference.[19] The need to carry on family lineage was the most significant reason to have a son with 71% of men agreeing to this notion.[19] The patriarchal kinship system where patrilineality and patrilocality manifest is intricately related to son preference and Vietnam's SRB.

Patriarchy, Patrilocality and Patrilineality

Son preferences stems from the patriarchal kinship system in Vietnamese society.[4,20] The origins of such a system derives from Confucianism.[4,21] This patriarchal society consists of patrilocality, which is one of the root causes of son preference.[19,20] Patrilocality is the term coined to describe the system where a married man and woman live with the husband's family.[2]

Since patrilocality is practiced, economic factors become a reason why sons are preferred. Daughters will eventually move away from their biological family, reside with their husband's family and her income will then benefit her husband and his relatives as opposed to her natal family.[2,19,20] A study conducted in the Red River Delta of a sample size of 1,855 households shows that more than 75% of married couples lived with the husband's family post-marriage.[21] The preference for patrilocality in this areas has heightened and remains a primary aspect of Vietnamese family dynamics in this area.[21] On the other hand, in parts of southern Vietnam there are weaker patrilocality and bilateral arrangements are more common. Bilateral kinship systems are when both female and male lines are acknowledged, recognized and used.[22] It is here where one will find couples that participate in matrilocality by living with the wife's side of the family. Overall, compared to the north, in the south marital residence is more prevalent, which is associated with lower levels of son preference. The contributions of daughters to their biological families in this area is notable compared to the north where patrilocality is stronger.[23]

Within this patriarchal society is a patrilineal kinship system that is another reason for son preference in Vietnam, which exerts profound pressure to have at least one male child. [2,19,4,24] Patrilineality consists of passing down primary assets along the male line as opposed to the female line. It can be thus intertwined with land inheritance as seen in peasant communities where land is an asset that is passed down. Also in patrilineality, the family line is continued through sons.[22] Having a son confirms that the family lineage will continue.[8] Legally, a daughter can also carry on the family name and her children can take her last name. However, this is not a social norm.[2] Continuing the family line is one of the driving factors for son preference. [2,19,20,25.]

Ancestor Worship

Patrilineality and continuing the family lineage are closely associated with the important practice of ancestor worship, which is an activity that is traditionally placed in the hands of a son and thus contributes to son preference.[2,8,4,20,25] If a couple does not bear a son there can be great concern regarding who will carry on the responsibility of ancestor worship. Most people in Vietnam in some way practice ancestor worship.[19] The Kinh are the dominant ethnic group in Vietnam.[26] In the majority of Kinh homes, an altar is set up for ancestor worship and it is made up of photos of older deceased family members, where incense is burnt, items like fruits and flowers are offered to ancestors and overall where care, respect, love and appreciation for family is conveyed. The very important duty of conducting ancestor worship is serious and therefore couples view bearing a son as necessary in order to take care of the their wellbeing as well as all of the family's ancestors in the after life.[2] This general responsibility of caring for the family that a son upholds also includes caring for his parents when they are in old age. The need to ensure one's old age support is another contributor to son preference.[8]

Old Age Support

A couple's preference for a son relates to their long foresight in securing stability when they are older and their need for someone to care for them. In Vietnamese society the well-being of the elderly in society depends on their families, mainly children, whom they rely on. Vietnamese people expect their children, especially their son to care for them when they hit old age. If they do not have a son to care for them their future is deemed insecure especially if they are poor. Since daughters marry and reside within their husband's family home, they are seen as not able to care for their parents.[8] Therefore, sons serve as the primary support for parents as

they age.[8] An absence of retirement benefits and increasing healthcare costs concern parents who are aging or are ill.[4] The need for support in old age deepens people's desire to bear a son.[2,8,4,20] The percentage of older adults living with a son is approximately 50% higher than the percentage of those living with a daughter.[27] However, evidence shows that among people who did not bear a son they may practice matrilocality. These older adults are taken care of by their daughters and demonstrate that their daughters manage the responsibility well and are considered to have even performed better than a son. Daughters are also seen as being able to build stronger emotional relationships with their parents. This proposes that male oriented, traditional family dynamics are not as strong in the country as originally thought. Nonetheless, there are still notions of humiliation towards matrilocality as a husband who resides with his wife and her parents implies that he abides by the rules of his wife's family, which can be seen as an embarrassment.[2]

Gender Equality

The patriarchal system that has manifested into the subordination of females has perpetuated a lack of gender equality in Vietnam. Distorted SRB that favors males represents the gender inequality that is evident as females are discriminated against even before they are born.[2] Discrimination is evident after they are born as well. Although the country has a history of effort in improving gender equality there remains obstacles. Most recently the 2006 Law on Gender Equality and the 2007 Law on the Prevention and Control of Domestic Violence was created. However, struggles on the national level have hindered gender equality include raising awareness, reporting and collecting sex-disaggregated data and monitoring. In general, women in Vietnam have less access to job opportunities and higher education and are exposed to regular attitudes and behavior that perpetuate their discrimination. Their earnings are less than men. For

instance, in the informal sector, men make 50% more than women despite a lack of substantial difference in seniority, education and hours worked.[28] Furthermore, domestic violence is a serious problem with 58% of women who had ever been married reporting being a victim of physical, sexual or emotional abuse.[29] Women who are abused earn wages that are approximately 35% less than women who are not abused.[30] The societal low status of females contributes to son preference and ultimately SRB. In addition to the lack of gender equality, normative factors have also played an important role.

Normative Factors

The patriarchal culture has created expectations that couples should bear sons. This kind of setting has established a certain norm, that if not achieved is criticized by society. People care about what others think of them in the community and bearing a son is not only a matter between a couple but is also a matter of the collective community. As an individual and a couple it is important to be viewed positively and with respect. Having the ideal characteristics of a child and family is important and the community's view on whether one is able to achieve this is highly significant.[2] Normative factors for bearing a son are seen in the pressure from family and the community to improve a woman's social status in the family and a man's reputation in society.[2,4]

There is immense expectation placed on women as they are seen as responsible for the gender of the children that they bear.[8] They struggle to handle the shame of being the primary topic of gossip in a community[8] and endure a lot of stress since they often reside with their in-laws who place enormous pressure on them.[2] Women who do not have sons are labeled as not knowing how to give birth. They are more likely subject to more discrimination and vulnerability

due to their responsibility to produce a male.[8] Those who do not bear a son can be subject to humiliation and bruised pride, respect and moral recognition. These pressures are more prominent in the northern part of the country among richer individuals.[2]

For men, if they do not have a son they are mocked. Having a son also asserts their masculinity.[8] Such forces are often felt from his natal family.[2,4] Such treatment and behavior makes not bearing a son lend itself to enduring its repercussions on a daily basis.[19,31] Strong community pressure and obtaining acceptance in the community and having respectable status is a large factor.[8,31]

In conclusion, the fundamental origins of son preference come from a patriarchal system of patrilineality and patrilocality, which consists of viewing a daughter as an economic loss, the continuation of family lineage, ancestor worship and caring for parents in old age. The societal norms and expectations to bear a son are also significant influences.

OTHER FACTORS

Prenatal Sex Selective Practices

Specific prenatal sex selective practices in Vietnam have led to the SRB imbalance. When couples act on their desire for a son they turn to prenatal sex selective practices.[23] They consist of ultrasound technology that is used to determine the gender of the fetus and if the fetus is discovered to be a female, sex selective abortion is then facilitated.[32] Ultrasonography can be used to determine the sex of the fetus and has become a common method to do so.[2] Utilizing this technological method to do so has become a profitable business in the country. They are available, accessible and affordable.[19,33] Ultrasound appeared for the first time in major hospitals in Vietnam in the middle of the 1990s and afterwards began spreading through the private

sector.[1,15] This occurred right before the early 2000s when skewed SRB began to emerge.[1,9] Since its introduction, various studies provide proof of its high use.

Evidence shows that there has been a large increase in the amount of women who obtain ultrasounds to which high levels of SRB have been linked. An example of the heightened usage of ultrasounds in general is shown in a particular study by Gammeltoft et al. where 400 surveyed women had undergone an average of 6.6 scans and one fifth of the sample having had ten or more. Two-thirds of the women utilized ultrasound for the purpose of detecting fetal development.[33] Women reported that their doctors suggested ultrasound scans. The booming commercialization of the health sector and the profitable business ultrasonography brings to the private and public health providers has manifested an overuse of the technology and a neglect of other antenatal care practices. The increase of ultrasonography has also led to greater feasibility for women to know the sex of their fetus. [33] The 2007 Survey of Births based on 1.1 million births report that the percentage of mothers who were aware of the gender of their fetus increased from 60% in 2003 to 73% in 2007.[1] Furthermore, a 2006 survey conducted by Vietnam's General Statistics Office estimated that 74% of pregnant women overall underwent an ultrasound test.[23] Particularly in the Red River Delta region 90% did so.[23] A total of 64% of women were aware of the gender of their baby.[23] Among those college educated and urban residents, more than 80% knew the sex of their baby.[23] The 2010 Population Change and Family Planning Survey has shown that 75.2% of women aged 15-49 who gave the birth from April 2008 to March 2010 knew the sex of the fetus before delivery.[15] Most women who are not literate, delivered their baby at home, or desired more children said they did not know the gender of their baby before giving birth.[13] The Population Change and Family Planning Survey conducted by Vietnam's General Statistics Office in 2006 reported that higher SRB among women who knew

the gender of their fetus (110.8), women who received the gender of their fetus by ultrasonography (111) and women who gained such information between the 12th and 22nd gestational weeks (112.4).[32] SRBs were more stable among women who did not know the gender of their fetus (105.9), who received this information by traditional techniques such as feeling the pulse (108.2).[32]

In a 2012 UNFPA study with a 1,424 sample size, 64% of men stated that their wife had an ultrasound test.[19] A total of 62% of men said that their wife had three or more ultrasounds during their last pregnancy and 4.3% of men confirmed that it was because they wanted a son.[19] Though it should be acknowledged that the accuracy of the percentage of men who admit to using ultrasound to determine the sex of the fetus is debatable due to the sensitivity of the topic since such sex determination through ultrasound is illegal.[1] Seventy-five percent of the men reported that the gender of their partner's fetus was given to them by providers during an ultrasound exam, despite the fact that it is illegal to inform parents the sex of the baby.[19] The reason behind the high number of providers who ignore the ban is the enormous competition among clinics or pressure from patients to know the gender as well as lack of strict regulation being enforced regarding sex identification.[19] Private clinics especially deal with economic pressure. There is a high level of competition because they do not receive government subsidies and are more likely to obtain patients by offering disclosure on their baby's gender.[2,19]

Abortion specifically to terminate undesirable girl fetuses, like ultrasound technology used to determine their gender, has also become a profitable business.[2] While there are other strategies to ensure male children, such as the abandonment, adoption, and infanticide of female infants, prenatal sex selection abortion continues to remain the driver of skewed SRB.[1] Sex selective abortion is largely dependent on whether health services offer affordable prenatal

ultrasounds. The country's private health sector has served an important role in the past twenty years in this regard.[23]

Abortion became legal under a wide range of indications in 1954 and in general there has not been much controversy over it.[15] Women are able to undergo an abortion without any gestational limits.[34] Vietnam has the paradoxical situation of both high abortion and contraception rates. In the 1990s the country reported more than 1 million abortions annually. Though the rate has declined since then, Vietnam's rates are still recognized as some of the highest across the globe despite the high contraceptive use of 79%.[35] As of 2010, the overall abortion rate was 0.8%. Specific regions like the North Midlands had the highest rate of 1.1% with the Red River Delta standing at the second highest at 1.2%.[28] High rates of abortion stem from factors such as poor contraceptive options, improper use of contraception and a reliance on traditional methods to prevent pregnancies that possibly results in heightened contraceptive failure rates.[35,36]

Sex selective abortion was made illegal with the 2003 Population Ordinance that forbids the use of ultrasound and abortion for the purpose of sex selection.[1] It also enacts fees for individuals who disobey this law and withdraws the licenses of people or organizations that violate it for one to three months but the reality is that these regulations are not enforced well and thus are not effective and health providers are not actually monitored and penalties are not given.[18,32] The legalization of abortion in 1954 has made the procedure accessible but the data on women who have an abortion for non sex selective purposes and for sex selective purposes remains absent as the latter is controversial and hard to measure.[1,33] The Ministry of Health has destroyed 30,000 books on sex selection and has closed internet sites that advertise such practices.[24] Due to the challenges of the illegality, sensitivity and thus underreporting of sex

selective abortion there is not a lot of research on it.[1,37] However, there are some data that has been collected and these data demonstrate that sex selective abortions are typically done in the second term of a pregnancy. Women who have many children, especially more daughters or who do not have a son are more likely to have a second trimester abortion. In Belanger et al.'s study among their sample size of 1,322 women who received a second trimester abortion, it is estimated that within that group 2 to 3.2 percent was a result of sex selection.[15] Also, repeat abortion in general is higher among women who do not have a son.[3836] The characteristics and role of the husband also impact women on whether or not to have an abortion in general. A husband's social and economic control of his wife is a pivotal factor in the decision making process for an abortion.[39] In a study with a sample of 1,424 men 5% supported abortion for reasons of the fetus being female.[19] However, the validity of data on individuals' views on sex selective abortion is subject to question because of inaccuracies of answers due to respondents' fear of being judged and the illegality of the practice.[1,15,33]

In Vietnam, people's reproductive choice stems from two factors: son preference and low fertility.[1] Sex-selective abortion has served as a way to satisfy both.[1] As for low fertility, it is important to assess its role in exacerbating skewed SRB.

Low Fertility

Low fertility is not the original cause of the SRB imbalance though it is a factor that has worsened SRB. While the rapid diffusion of ultrasound technology have served as vehicle for couples to act on their preference for sons, couples are making decisions in a context of low fertility—meaning they want to have a son while having a smaller family size. In order to do so

ultrasounds and abortions serve as a method to allow them to achieve this.[1] When the ideal family size decreases, the likelihood of not having a son is higher.[9]

Vietnam's two child policy was created in 1989 and limited the amount of children couples could have, which has affected sex selection.[15] Following the enactment of this law was a rapid fertility decline that began in the 1990s as the ideal family size decreased.[11,40] In 1970 women on average gave birth to more than 6 children.[23] In 1979, the total fertility rate in Vietnam was 6 children per female of reproductive age and dropped to 2.2 children in 1998.[20] In 2006, it decreased to 2.07[40] and in 2010 it lowered even further to 2.0.[23] Simultaneously, son preference has also persisted.[15] This lower fertility environment has contributed to the enormous stress related to having a son.[23] The tension between the preference for fewer children and the wish to have a son especially affects women who are deemed socially and physically responsible for the gender of their children as their status depends on it.[31] In other countries such as China and India, SRB also manifested as problem when family planning policies were implemented that enforced lower fertility. [3]

While son preference, sex determination through ultrasound technology, sex selective abortion and low fertility have been identified as the three elements that perpetuate unbalanced SRB, though not primary causes, there are other influences that have been acknowledged in the literature. They provide a deeper insight of the many factors that can influence SRB. For instance, other practices besides sex selective abortion used by couples to control the gender composition of their family include the Stopping Rule method, which is when women cease bearing children after they have a son.[41] Another practice is family planning around the lunar calendar where couples will try to plan the birth of their son or daughter to fall within a certain year to obtain a particular zodiac astrology.[18,42] Many of these factors that drive SRB imbalances

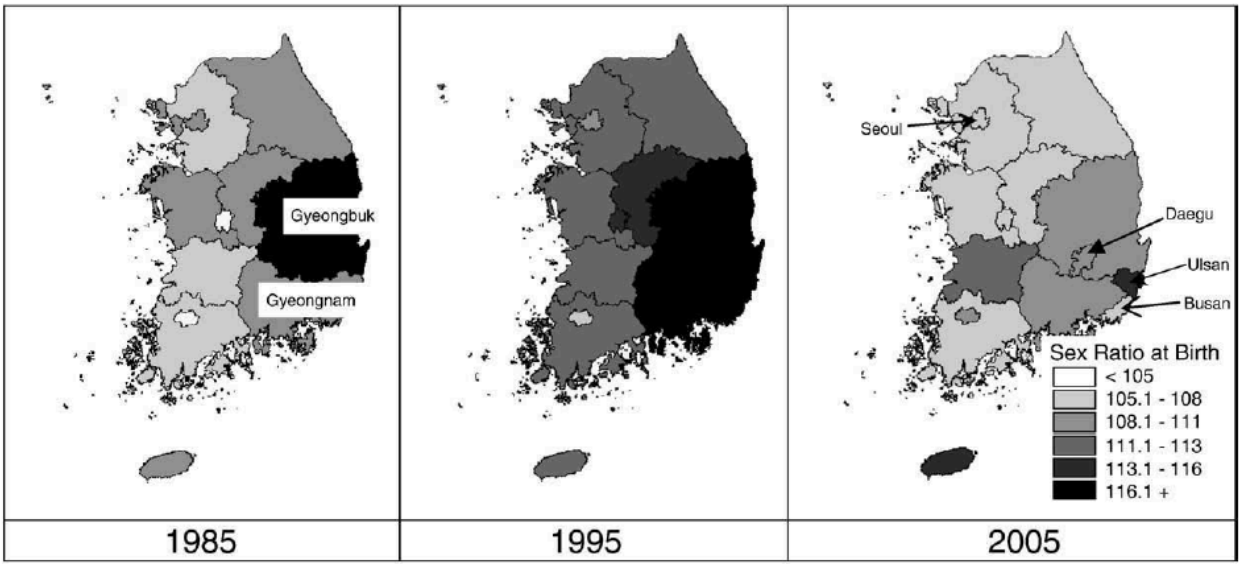
in Vietnam has also been identified in South Korea. The parallel characteristics of both countries shed light on how SRB has manifested and how to move forward in addressing the issue.

SOUTH KOREA

SRB HISTORY

South Korea's case shows the successful journey of a nation that overcame the obstacles of a SRB dilemma. The average SRB became distorted in the 1980s, increased to 115 in 1990, remained stagnant at 114 during the start of the 1990s, experienced an enormous reverse by the mid-1990s and in the mid-2000s returned to biologically normal levels.[10,43] In 2007, it was 106.1[12] and in 2012 it was at 105.7.[44] South Korea is the only country that has experienced all three phases of a SRB transition.[10] These three phases are 1) the rise, 2) the leveling off and 3) the decline and return to usual levels. Other Asian nations have undergone phases one and two, but South Korea is the only one to have entirely achieved phase three.[10]

Figure 2. Sex Ratio at Birth by Region, South Korea, 1985-2005



Source: Korea National Statistics Office KNSO 2006, http://kosis.nso.go.kr

The country has exhibited enormous variation in regards to SRB where one can observe astonishing numbers that surpass 120 in Taegu city and in the Gyeongbuk and Gyeongnam provinces.[7] However, other areas like the southwestern side of the nation's peninsula demonstrates barely any rise at all due to factors like religion. Most people who reside in the southwest and who follow a religion are Protestants. The area of Gyeongsang, which encompasses both Gyeongbuk and Gyeongnam provinces and the cities of Daegu, Busan and Ulsan in southeast Korea are known for their striking imbalances.[7] In 1990, Daegu's SRB was 129.7 and 130.8 in Gyeongbuk area.[7] Gyeongsang is recognized as being more conservative and extremely patriarchal with a strong Confucian history, which is thought to lend itself to higher son preference.[45]

CAUSES OF SRB

The multiple reasons why SRB surfaced was because of son preference that stemmed from the patriarchal system that fostered a low status of women and their inequality, which was further exacerbated by prenatal sex selective practices and low fertility.[22,45,46]

Patriarchal System

SRB causes in South Korea derive from Confucian influences of son preference that is rooted in the society's Confucian patriarchal family system of patrilocality and patrilineality enforcing the need of a son to manage ancestor worship, carry on family lineage and secure old age support for parents.[22,7] The system's incentives to raise sons instead of daughters' limit a female's economic level and continue a cycle of subordination of women. Patrilocality keeps a

woman from investing in her parents and biological family's needs, as she is absorbed into her husband's family. When women marry, they integrate into their husband's family and are no longer seen as valuable by their biological family. Patrilineality practiced is strict and not very flexible.[22]

Ancestor worship drives the preference for male offspring. There are strong ideologies concerning the afterlife and the need to conduct rituals of ancestor worship to secure the welfare of deceased family members. Not having a son that can conduct ancestor worship means that one's afterlife is in peril. Citizens worship male ancestors and the duty to care for them belongs to their descendants. The oldest son inherits the largest portion of property and the duty of caring for the parents and ancestors. The responsibility is not interchangeable and the system is very formal. For example, it cannot be shifted to a younger son even if the parents believe he is more suited. Also, if a couple does not have a son, another male member such as their nephew cannot take on the role of the eldest son.[22]

The continuation of family lineage is taken seriously and a male who does not fulfill the filial duty of continuing the family lineage and taking care of his parent's is not perceived well culturally. It is believed it will negatively affect his current life and luck.[22] If the family lineage ceased, it is seen as an abandonment of prior generational ancestors who will then have no one to tend to their graves or conduct ancestor worship appropriately. Korean culture emphasizes blood relationships where it is not accepted for a sonless man to adopt someone who is not blood related, which heightens the pressure for women to bear a son. The first-born blood related son has the heaviest responsibility to care for his ancestors. He is also held accountable in providing support to parents as they grow old. Traditionally older adults live with their children and most do so with their eldest son.[47]

OTHER FACTORS

Prenatal Sex selective Practices & Lower Fertility

Ultrasounds that served as a mode for prenatal sex determination were introduced in the 1980s[48] and rapidly diffused as did access to abortions that allow couples to act on their son preference and leads to skewed SRB.[10,7,45,46] Prenatal sex identification was made illegal in 1987.[43] In general, abortion is illegal except in particular situations but it is not difficult for women to obtain an illegal abortion.[49] Though it is not legal, both ultrasound for sex determination and sex selective abortion are still available.[46] They still occur despite the government's robust regulations.[7] In 1953, abortion was made illegal for all circumstances. Then in 1973 the Maternal and Child Health Law created exceptions that allowed women to obtain an abortion. A woman can have an abortion if it is to save her life, to preserve physical or mental health, in cases of rape or incest, fetal impairment or economic or social reasons. An abortion can be done up to 28 weeks of the pregnancy and if she is married the consent of both her and her spouse is required.[50] Due to its illegality, there are no studies at the national level that study its prevalence. However, in a study by Ahn et al., using a sample of 25 hospitals and 176 private clinics, it is estimated that in 2005 the national abortion rate was 29.8 per 1000 women aged 15-44 years old.[49] The current modern contraception rate is 69 per 1000 women.[51] As for lower fertility, the government implemented a National Family Planning Program starting in the 1960s.[52] As a result, TFR reduced from 6.0 births per woman in 1960 to 2.1 births per woman in 1983.[53] In 2015, it dropped down to 1.2. Women's increased level of education was pivotal in lowering the country's fertility.[53] Like Vietnam, South Korea experienced a high abortion and contraception paradox. Abortion rates began to lower in the 1980s as the contraception rate

continued to climb and fertility decreased. The transition from traditional methods to modern contraception was the cause of the eventual reduction in abortion rates.[54]

Religion

There are relationships between the differences in religion across regions and SRB. Buddhists make up 47.0% of the population with protestants consisting of 36.8% and Catholics 13.7%.[7] People blend their religious values with Confucianism. For example, Protestants perform ancestor worship. Confucianism impacts people' daily lives and is viewed as part of the culture as opposed to a religion. The presence of Buddhism is more associated with SRB than socioeconomic aspects. Buddhism does not take a strong stance toward its views on abortion nor son preference. However, the religion has been associated with son preference as it is typically more accommodating of Confucian traditions like ancestor worship that requires a son. In comparison, Protestantism that was introduced to South Korea by the West rejects practices like ancestor worship. Those who identify with religions such as Protestantism and Catholicism also oppose abortion.[7] These women were less likely than others from other religions to undergo an abortion. A study that utilized data from the 2000 Korea National Fertility and Family Health Survey found that religion was an important factor in whether or not a woman sought an abortion in general.[55]

Zodiac Astrology

The ideology that a person's character is dependent on their zodiac astrology has impacted fertility and SRB. The fertility rate reduces greatly during the year of the Horse. Parents attempt to not have daughters during this year because in zodiac astrology a Horse is

normally symbolic for masculinity, which is not a desirable trait for a daughter or a wife. Daughters who have the Horse as their zodiac sign are thought to endure unhappiness and bad luck. This is the same for other zodiac signs like the Tiger and the Dragon, but the year of the Horse is the most disliked year. In the year of the Horse of 1990, it is estimated that due to zodiacal preferences a surplus of 8,000 girl fetuses were aborted, after controlling for intentional misreporting as some parents give their child a false birth year if he or she was born in an auspicious year to avoid troubles later on in life.[56]

INTERVENTIONS IMPLEMENTED TO STABILIZE SRB

South Korea acted to address their SRB crisis with a variety of solutions. In 2005 the male headship system known as Hojuje was abolished, which took away any legal basis for patrilineal succession.[43]Campaigns were implemented in the beginning of the mid-1990s to raise public awareness on the repercussions of a skewed SRB.[57] A particular campaign was disseminated through the media and widely emphasized the expected lack of future brides.[48]Those in the health sector also launched initiatives like the Korean Medical Association in 1995 that began a media campaign in opposition to sex determination.[12] Laws that forbade sex-selection technology were strongly enforced including the suspension of medical licenses for physicians who conduct sex determination practices.[57] Starting in 1990, just three years after prenatal sex identification was banned, doctors found conducting such activities risked large fees, suspension, and termination of their license to practice.[45] The year 1990 was the peak year for SRB before it gradually decreased.[45] Laws like the Sexual Equality Employment Act of 1987 and the revision of the patriarchal family law enacted in 1948 are examples of gender conscious laws that were considered factors that led to the SRB drop.[58]

The necessity to change the Family Law was identified by Korean feminists and after a lot of debate that spanned years some adjustments were made in the Family law. These included but were not limited to: promoting equal inheritance among sons and daughters, permitting the oldest son to give up his lead role in the family, and allowing the recognition of lineage up to the same generational length on both the mother's and father's side of the family. The goal was to heighten the role of women socially. Their argument for gender equality was backed by the state's concerns about the ramifications of a shortage of females.[22]

THE RETURN TO STABLE SRB

Urbanization and Modernization

There have been structural shifts that have contributed to the lowering of SRB. While changes at the individual level contributed to this decrease, broader shifts like modernization and urbanization had pivotal roles.[44,59] The country transitioned from an agricultural society to an industrialized within one generation.[52] The majority of families now resides in urban areas and lives a nuclear family life style. In contrast, during the agrarian economy, males inherited the land of their parents' and lived near them. Daughters would move after they married.[60] This does not necessarily apply in today's modern context of urbanization where urban parents have a daughter who is able to give them financial, emotional and physical support more so than she would have been able to in rural past times. Also a son's work may lead him to a city away from his parents residence.[59] Today, urban living augments the probability that sons will live in a different city and daughters are more often now living nearer their parents than in the past. The amount of families living in multi-generational households, particularly three generations or more has dropped from 29% in 1960 to 10% in 2000.[60]

Instead of depending on the sex of the child, whether or not parents in urban areas receive help from their offspring is more reliant on the type of relationship they have and who lives in the same city. Older adults who reside in urban regions normally have worked in careers that have provided them assistance in health care coverage, which lessens their need for fiscal support from their sons and daughters.[59]

Normative Changes

Alongside the structural changes of urbanization and modernization the normative change that moved away from patriarchal norms influenced SRB.[61] For instance, matrilocality has shifted family dynamics and impacted SRB. Evidence shows that patrilocality has weakened and residing with the maternal side of the family has become preferable. Younger married men have a preference for practicing matrilocality because their wife's parents are very supportive.[43] This is in comparison to the husband's parents who have expectations of the daughter-in-law to complete housework in addition to working. Younger generation couples financially and emotionally depend on the wife's parents.[43]

The ways children are viewed and valued by their parents have altered. It has adjusted from seeing them as economically beneficial in an agrarian society to psychological and relationship benefits in modern society.[62] It is among the country's development that parents were able to shift their views where they saw their children as economic resources, which lessened the need to bear a son to support them.[48]

Gender Equality

The shifting roles of women and their progress toward gender equality also contributed to the leveling of SRB. Women's participation in education and employment has increased over the decades. In 1980, the percentage of women enrolling in higher education was 3.6% compared to 18% in 2000. Also, 37% of women were active in the labor force in 1963 which rose to 49% in 2000.[52] The status of women changed over time as seen in their advancement in areas like education[52,60] and it is recognized as one of the reasons that son preference has declined.[63] In 1991, the proportion of women who said it was better to bear a son or that it was crucial to have a son dropped from 69.2% in 1991 to 40.5% in 2012.[44] Over time the desire to have a son and the reasons why changed. In 1985, 48% of women thought it was crucial to bear a son and 19% believed it was desirable.[43] In 2006, there was a huge shift and only 10% believed it was necessary and 39% thought it was desirable.[43] During this same time period the reasons why married women wanted to bear a son also changed. No longer did trends show that a son was desirable because of continuation of lineage or financial support. Rather, they were desired for psychological reasons and for happiness within the family.[43]

In general, the overall impact of the nation's development led to positive normative changes throughout society. Almost three-quarters of the decline in son preference from 1991 to 2003 is due to normative change and the rest because of an increase in the amount of urban and educated individuals.[55] Improved equality for women is demonstrated in the higher education and employment rates over the years. These transformations have led to better social and economic status for women. They also influenced son preference, which ultimately impacts SRB.

MIGRATION

Son preference has also been viewed in today's context of migration. While people in Vietnam are expressing a desire to bear sons this preference is transplanted into other nations as Vietnamese individuals migrate to more developed countries.[64] Enormous influx of the migration from Vietnam to the US began with the arrivals of refugees towards the end of the Vietnam War that ended in 1975.[65] In 2015, there were 1,292,000 Vietnamese immigrants living in the US.[65] Based on the 2001 and 2006 Canadian Census the SRB among Vietnamese populations rises with the third birth when the first and second children are girls.[66] Among South Koreans in the United States the 2000 U.S. Census has also documented that the SRB is male leaning at a higher parity when prior births were daughters.[64]

Globalization has created a transnational marriage market where now Vietnamese women are leaving Vietnam to reside with foreign husbands. These women have been defined as marriage migrants.[46,67] Between 1995 and 2009, the majority of Vietnamese marriage migrants married South Korean and Taiwanese men.[67] In the particular province of Can Tho in southern Vietnam 90% of documented marriage were between a Vietnamese woman and a foreign partner from either South Korea or Taiwan.[67] From 1990 to 2007, Vietnamese women made up the second largest group of foreign spouses from these two countries.[67] The transnational marriage market has greatly impacted communities as this environment favors women who leave home and reside with her new spouse and his family. Thus, men back in Vietnam stay and are left in environments where not only there is a lack of women because of a disruption in the SRB but also because women are leaving the country to marry foreign men. It has shifted the power and value of women. They transition to a position where they live in a more developed country and send money back home to support their families in Vietnam. International marriage has

weakened son preference and strengthened daughter preference due to the fact that girls have the potential to migrate for international marriage, have a better economic value and can boost the family's income. However, while they are abroad caring for their parents and continuing the family line still falls on sons back home in Vietnam.[67]

QUALITY OF THE LITERATURE

VIETNAM

In the body of literature, research on son preference in particular is reliant on a limited amount of qualitative studies from UNFPA. Sources that demonstrate the quantitative magnitude of the issue range from a variety of different types of studies that include but are not limited to censuses, annual surveys, the Vietnam Demographic Health Survey and so on. Such sources provide data in order to produce estimates of SRB at the provincial, regional and national levels and sometimes the SRB reported differ due to the quality of data used to assess SRB. Concerns over the quality of data analyzed to examine SRB include lack of representation of the general population due to small sampling, inadequate number of births in the data and incompleteness of information such as unavailable data from health centers. Nonetheless, despite the flaws in the data and differing reports on SRB what is consistent across the literature is the documentation of high SRB in the Red River Delta region. A prominent strength of the literature is that the rigor or lack thereof of quality studies and data used to estimate SRB has been assessed and kept into consideration when analyzing SRB. Sources examine the flaws and strengths of studies and data in the literature. Such analysis allows those in the field to understand better the limitations in the evidence and what needs to be done to improve estimates.

There is very little direct research on sex selective abortion in Vietnam, likely due to the sensitivity and illegality of this procedure.[1,15,37] This is a murky area regarding ultrasound and abortions and measuring how many are done for sex selective purposes or not. It can be difficult to retrieve accurate data as individuals may not want to admit to such practices because of the illegal and controversial nature. Unless these topics become more acceptable to discuss, strong data on this subject will continue to be out of reach. More indirect evidence is available regarding how ultrasonography and sex selective abortion have led to SRB. This consists of the rapid explosion of ultrasound technology preceding the first emergence of SRB imbalance as well as the relationship between the increasing number of women who report knowing the gender of their baby before birth and skewed SRB.

SOUTH KOREA

The literature available on South Korea regarding SRB is older due to the more dated time period that SRB emerged in the country. Although South Korea is the only country that has exhibited enormous disruptions in SRB and has overcome it, there is not substantial research that analyzes how this was achieved. Of the studies that are available there is a reliance on the Korea National Fertility Health Surveys. Sources that discuss the shift often focus on the country's development. Various sources briefly discuss different interventions and regulations that were implemented in response to the skewed SRB. However, there is a gap in research that studies the collective and effectiveness of these interventions and its impacts. Fewer sources mention the significance that low fertility and prenatal sex selective practices had on spiking SRB, though the ones that do discuss it argue that these were significant factors. While the literature asserts that religion is an important component in the country's SRB variation, the assessment of the impact

of religion during urbanization and modernization and the transition back to stable SRB is not captured.

COMPARISON OF VIETNAM AND KOREA

Both Vietnam and South Korea are influenced by Confucian culture and thus have similar patriarchal societies where patrilocality, patrilineality, family lineage, ancestor worship and old age support foster son preference. Another common trait is that both have a history of family planning policies to lower fertility, experiences in enormous growth and development and have cultural beliefs in zodiac astrology. However, they differ in that South Korea has been more influenced by Western culture through Christianity, which has factored into the variations of SRB in the country. In Vietnam, the majority of people do not follow a religion (81.8%) and the largest religious group is Buddhist (7.9%).[26] The two nations also prohibited the use of ultrasounds and abortion for sex selection, although regulations against sex-selective ultrasound in Vietnam were not well enforced. However, women's access to legal and safe abortions is necessary to achieve and maintain their reproductive health, well-being and rights. Inhibiting women's ability to acquire a safe and legal abortion does not lower abortion rates, instead it leads to women pursuing unsafe abortions.[68] A decline in SRB through improved gender equality as well as access to legal and safe abortions need to coexist.[3] South Korea's sex selective abortion ban was not the driving reason why SRBs stabilized, as women's status improved with increased education and societal urbanization and normative changes like how children are viewed were pivotal. A similar ban on sex selection ultrasound and abortion in Vietnam alone also has not solved the country's imbalance. This reveals that other forces are significant. The role of the respect for authority and the government comes to question when noting people's lack

of compliance toward policies that ban sex determination via ultrasound and sex selective abortion as well as the questionable effectiveness of such regulations. Health providers illegally provide the gender of the fetus or perform sex selective abortion and patients seek such services, which raises the question of the role of authority, its impact if any and if so to what extent. However, the general attitudes towards the role of the government, compliance towards implemented regulations and respect for authority on a larger level that may hinder progress toward stabilizing SRB is an area that is not well represented in the literature for both Vietnam and South Korea. The literature for Vietnam has been dominated by UNFPA serving as a foundation of evidence on the issue. South Korea does not have such an established pool of sources from a particular entity.

RECOMMENDATIONS

Based on the review of the literature from both countries, recommendations that can be considered to address the SRB dilemma in Vietnam include:

Research

- Compliance and the effectiveness of regulations and policies relating to sex determination technology and sex selective abortion.
- Impacts of SRB as it relates to sex trafficking, gender based violence, the marriage market, etc. to collect data on how SRB exacerbates these kinds of issues.
- The roles of males in family planning in Vietnam as it relates to sex determination and sex selective abortion.

- The role of migration and how international marriage is changing women's roles and family dynamics.
- Strategic methods in effective ways to promote having daughters such as cash transfers for women and couples that bear girls, which can reduce the economic strain associated with having daughters.

Mass Media Campaigns for Normative Change

- Spread awareness on the dangers of a lack of brides as well as initiatives that are tailored toward addressing males and their views on son preference. Such emphasis is crucial as men can play a large role in this context as they hold the highest status in power in patriarchal societies.
- Educate the public on the country's skewed SRB and its implications.
- Promote awareness and advocate for equal educational and economic opportunities for women and girls. This will help address the subordination of females that is perpetuated by society's patriarchal system.
- Promote social acceptance of bilateral living arrangements to promote the practice of matrilocality in order for both paternal and maternal family lines to be recognized and utilized. This will prevent women from absorbing into their husband's families less and allow them to contribute more to their biological families.
- Promote social acceptance of women's ability to be responsible for ancestor worship and providing old age support to parents.

Government Action

- Assistance in providing benefits to the elderly in order to alleviate some of the responsibility for children to care for their parents, especially among poor populations.
- Expand educational and employment opportunities for women.
- Eliminate punitive regulations against women and re-focus and focus on support for initiatives that promote normative changes that are more influential in affecting SRB.

CONCLUSION

Vietnam's SRB issue stems from son preference that derives from a Confucian influenced patriarchal system of patrilocality and patrilineality. Son preference has been intensified by low fertility and prenatal sex selective practices like sex determination through ultrasound technology and sex selective abortions. Vietnam and South Korea have similar traits as seen in Confucianism and their patriarchal society. In the case of South Korea one sees a successful return back to stable SRB levels through normative change, urbanization and modernization and more equalitarian gender roles. Though more research needs to be done to fill in gaps in the literature concerning subjects prenatal sex selective abortion and efficacy of policies, Vietnam should assess closely South Korea's campaigning methods, regulations and efforts for normative change in order to achieve more normal SRB levels again.

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