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Mortality and Spousal Bereavement: A Review of Risk Factors and Associations

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### Abstract

This literature review identified and analyzed various factors that are associated with an increased risk for mortality following spousal bereavement. Differences in gender, age, and time since bereavement have been widely researched, showing a greater risk for men, younger individuals, and persons who are more recently bereaved. Other variables including remarriage, cause of death, socioeconomic status, and other social, emotional, mental, and physical health factors were discussed, however, research is lacking. Methodological problems of sample sizes, use of control groups, and measures of variables were analyzed. Additional research of social, mental, and physical health variables is needed in order to move forward in developing strategies to minimize mortality outcomes following spousal bereavement.

### Mortality and Spousal Bereavement: A Review of Risk Factors and Associations

Americans are living longer than ever, with the percentage of adults 65 years or older having tripled from 1900 to 2002 (Administration on Aging, 2003). However, while the moment until death has been prolonged, death is still inevitable. Because death is inescapable, widowhood is unavoidable and everlasting. Thus, finding ways to ameliorate the effects of spousal bereavement is of the utmost importance.

The Webster's II New College Dictionary (1999) defines bereavement as being deprived of something that an individual holds dear. Those who are deprived of their companions have an increased risk for mental and physical health problems (Chen, Bierhals, Prigerson, Kasl, Mazure, & Jacobs, 1999; Gallagher-Thompson, Futterman, Farberow, Thompson, & Peterson, 1993; Ott & Lueger, 2002), and even death. Various studies have found an increased risk of death following the loss of a spouse (Bowling, 1994; Helsing, Szklo, & Comstock, 1981; Jones & Goldblatt, 1987; Kaprio, Koskenvuo, & Rita, 1987; Lichtenstein, Gatz, & Berg, 1998; Parkes, Benjamin, & Fitzgerald, 1969).

While researchers have discussed several possible theories as to why increased mortality occurs, the question remains unanswered. However, in their pursuit for the answer, researchers have found fairly consistent patterns of mortality following spousal bereavement for variables such as gender, age, and duration of bereavement (Bowling, 1994; Helsing et al., 1981; Jones & Goldblatt, 1987; Kaprio et al., 1987; Lichtenstein et al., 1998; Parkes et al., 1969). However, research on many other variables appears to be non-existent or grossly lacking.

While the study of increased mortality following bereavement is complex and challenging, it is necessary in order to identify those who are at risk. Identifying risk

factors enhances the ability to create and implement prevention strategies and increases the understanding of possible explanations for the increased mortality risk.

The purpose of this literature review was to compare and contrast various factors that are associated with an increased risk for mortality including: gender, age, duration of bereavement, cause of death, remarriage, socioeconomic status, and other social, physical, and mental factors. The theories suggested by researchers as possible explanations for increased mortality were evaluated in relation to the findings of this review. In addition, the methodology of the reviewed studies was assessed in order to evaluate the validity and reliability of the research findings. Lastly, practical applications and prevention strategies were discussed and analyzed.

#### Philosophical Tenets

In considering the possible explanations for increased mortality following spousal bereavement, three theories emerged within the literature. First, the theory of homogamy postulates a tendency for individuals to select marital partners with a health status similar to their own (Jones & Goldblatt, 1987; Kaprio et al., 1987; Lichtenstein et al., 1998; Parkes et al., 1969; Stroebe & Stroebe, 1993). Second, the theory of joint unfavorable environment attributes increased mortality to the tendency for marital partners to share similar living conditions, social environment, and health habits (Jones & Goldblatt, 1987; Kaprio et al., 1987; Lichtenstein et al., 1998; Parkes et al., 1969; Stroebe & Stroebe, 1993). The third theory proposes that increased mortality is a direct result of the stresses caused by the loss of a spouse (Jones & Goldblatt, 1987; Kaprio et al., 1987; Parkes et al., 1969; Stroebe & Stroebe, 1993).

In evaluating how to protect or decrease the mortality effects in bereavement, researchers frequently discussed the social support hypothesis. This hypothesis postulates that a strong social network curtails the effects of bereavement, including the risk for mortality (Bowling, 1994; Helsing et al., 1981). All of the theories and hypothesis outcomes were analyzed in relation to the results reported within this literature review.

### Literature Review

The three variables most widely researched in association with mortality and spousal bereavement are gender, age, and time since bereavement. While the extent to which these three variables affect mortality has some variability, the pattern is quite consistent with very few exceptions.

#### *Gender*

The most widely accepted risk factor in mortality patterns following spousal bereavement is gender; research has shown that males are at greater risk than females (Bowling, 1994; Helsing et al., 1981; Jones & Goldblatt, 1987; Kaprio et al., 1987). While it is clear that males are at a greater risk than females, it is less clear as to whether or not females are truly at risk at all (Helsing et al., 1981; Jones & Goldblatt, 1987).

Helsing et al. (1981) obtained a sample from a 1963 non-official health census distributed in Washington County, Maryland for persons 18 years or older. The study compared mortality rates of 2,828 widowed women to the mortality rates of 2,828 married women who were matched according to race, age, and type of geographical residence (i.e. rural, suburban, or urban). The results indicated that there was a small mortality risk for widowed women when compared with married women, but these

results became statistically insignificant after adjustments for age, smoking, education level, frequency of church attendance (religiosity), age at first marriage, and number of bathrooms in the home (used as an indication of socioeconomic status). In males, however, the mortality rates of 1,204 widowed men were significantly greater than the rates of 1,204 matched married men, even after adjustments for the variables were made. In fact, these adjustments had very little effect on the mortality rate differences

Helsing et al. (1981) provided a potential explanation for the sex differences in mortality explaining that women may be more resistant to mortality following bereavement through the same physiological and psychological mechanisms that provide all women with greater longevity. What exactly these mechanisms are is unknown, but we do know that on average women live about 7 years longer than men (Cavanaugh & Blanchard-Fields, 2002).

Jones and Goldblatt (1987) reported similar results in a study including a sample of 14,900 widowed women and 7,060 widowed men. This sample was obtained through 1971 census records of England and Wales. The results showed that widows had a very small excess in mortality, as compared to national mortality rates of all females, and perhaps no excess at all. But, while studying the effects of age differences, they found that for widows under age 65 the mortality rates are much higher and are similar to the elevated mortality rates of widowers. Therefore, it is necessary to examine gender and age jointly.

These results are best used to identify those who are at greater risk for mortality following spousal bereavement. While there is concern for widowed females, widowed males have a substantially greater risk for mortality. The results on gender differences do

not strengthen or weaken support for any of the theories described earlier. However, Helsing et al. (1981) proposed a theory for the gender differences stating that women are innately more resistant to morality following bereavement, just as they innately have greater longevity.

### *Age*

Age is a significant factor in increased mortality rates among both widows and widowers. The risk of mortality is higher for younger widows and widowers than those who are older (Helsing et al., 1981; Jones & Goldblatt, 1987; Kaprio et al., 1987; Lichtenstein et al., 1998). Kaprio et al. (1987) obtained a sample of 95,647 widowed individuals using Finland's computer files of death certificates for everyone who died between 1972 and 1976. After analysis, it was found that, for males, the mortality rates remained excessive for widowers under age 65 for three years following bereavement while widowers 65 years and older only remained at risk for six months.

As stated previously, Jones and Goldblatt (1987) found no statistically significant excesses in mortality among females except for those who were under age 65. Lichtenstein et al. (1998) conducted a co-twin study using data from the Swedish Twin Registry. The co-twin analysis included 1,897 widowed men and 3,666 widowed women. The mortality rates of the 5,563 widowed individuals were compared with the mortality rates of their still-married co-twins. Interestingly, Lichtenstein et al. (1998) found that widowed women under the age of 70, who survived the first four years of bereavement, were actually at a lower risk for mortality than were their married co-twins. Lichtenstein et al. (1998) attributed this result to the increased competence and psychological growth reported by widows after they have adjusted to widowhood.

No explanations or theories have been stated as to why younger widows and widowers are at greater risk. However, it could be assumed that older adults generally have more experience in coping with the death of loved ones, causing them to have better outcomes. It might also be assumed that younger widowed persons might feel more cheated by death because their spouse died earlier than they anticipated, thus, causing the individual to experience more intense grief symptoms for longer time periods. Research has found that symptoms of grief and stress are associated with heart disease (Kaprio et al., 1981; Parkes et al., 1969). These results were discussed in greater detail during the review of death causes.

#### *Duration of Bereavement*

While studying mortality patterns, it is necessary to also examine the amount of time passed since bereavement. In the studies reviewed, the effect of time since bereavement on mortality patterns is very consistent with exception to the findings of Helsing et al. (1981). In most cases, it was found that the risk of mortality was greatest for widows and widowers directly following the death of their spouse (Jones & Goldblatt, 1987; Kaprio et al., 1987; Lichtenstein et al., 1998; Parkes et al., 1969). However, Helsing et al. (1981) found, within a sample of 4,032 widowed persons, no significant differences in mortality rates among the recently bereaved when compared with those bereaved for longer time periods. No explanations were provided for these findings.

Among the studies that found an increased mortality risk closely following bereavement, gender differences were observed. For females, Jones and Goldblatt (1987) and Kaprio et al. (1987), who had very large samples, found that widows were at greatest

risk for mortality during the first month of bereavement and then the risk quickly and steadily decreases thereafter. Neither study provided any explanation for these findings.

For males, Jones and Goldblatt (1987) reported that while the greatest mortality excesses occurred during the first month of bereavement, men were not as greatly impacted immediately following bereavement as women were. However, the decline in mortality rates was more gradual, with mortality excesses continuing through to the twelfth month following bereavement. Jones and Goldblatt (1987) provide an interesting explanation for the gender differences in relation to time since bereavement. They explained that the study of mortality patterns in relation to duration of bereavement help to discern whether mortality increases are due to the effects of becoming widowed or from the effects of being a widow or widower. Thus, Jones and Goldblatt (1987) concluded from the results that perhaps women are more affected by the initial shock of becoming a widow and men are more affected by actually being and living as a widower.

Kaprio et al. (1987) examined the effects of age in relation to time since bereavement for widowers. The number of widowed men included in the sample is not stated, but the sample consisted of 95, 647 widowed individuals. For older widowers the greatest risk was immediately after bereavement followed by a decline to the national mortality rates for men of the same age after six months. For widowers under age 65, the excess mortality rates continued through the first three years of bereavement. Parkes et al. (1969), whose sample only included males 55 years and older, found that the greatest excesses in mortality occurred during the first six months and thereafter declined to levels similar to national mortality rates of married men of the same age group.

In summary, the findings suggest that the mortality risk is greatest for both men and women during the first days, weeks, and months following bereavement. Researchers did not provide any explanations for these results. But, it might be assumed that the reason the mortality risk is greatest immediately following bereavement is because it is also the time of greatest distress and grief. As stated previously, grief symptoms and stress have been associated with heart disease (Kaprio et al., 1987; Parkes et al., 1969). These results were discussed in more detail within the review of findings in death causes among the bereaved.

The findings also suggested that the mortality risk for men endures for a longer time period, while women's mortality risk was confined to the first six months. As previously stated, Jones and Goldblatt (1987) postulated that women are more affected by the short-term stress and shock of becoming a widow, while men are more affected by the long-term outcomes of living and being a widower. This would also provide support for the theory that mortality increases are a direct result of the effects of widowhood (both long-term and short-term effects).

### *Remarriage*

In light of the suggestion provided by Jones and Goldblatt (1987) that men might be more susceptible to the effects of being a widower (i.e. lack of social network or living alone), it is important to examine the effects of remarriage on widowers' mortality rates. Although such research would provide extremely valuable information, only one study in this review investigated the impact of remarriage.

For widowers, Helsing et al. (1981) found that those who remarried not only lowered their mortality risk, but, in fact, were found to have a lower mortality risk than

the rate of married men. Helsing et al. (1981) investigated the possibility that healthy widowers are more likely to remarry and widowers who are sick or frail are less likely to remarry. All widowers who died within the first three years of bereavement were removed from the sample, thus, eliminating the most sick and frail widowers. Even after this adjustment, those who remarried within three years after bereavement still had considerably lower mortality rates than those who did not. The sample of women who remarried was insufficient for statistical analyses.

Helsing et al. (1981) explained that these results support the hypothesis that social support provides a buffer for the stressful effects of bereavement. Because very little research has investigated the impact of remarriage, it is clear that future research is greatly needed. Helsing et al. (1981) concluded that if research provided greater evidence of a causal relationship between remarriage and decreased mortality, steps could be taken to adjust income and social security tax laws to promote remarriage.

#### *Cause of Death*

It is important to identify the greatest excesses in mortality among the various causes of deaths in the bereaved. Parkes et al. (1969) conducted a study with a sample of 4,486 widowed men 55 years or older. The mortality rates and cause of death were compared to national mortality rates and death causes of married men of the same age group. The findings of Parkes et al. (1969) reported the greatest mortality excesses in widowers (when compared to married men) occurred in the diagnosis of deaths due to coronary thrombosis and other arteriosclerotic and degenerative heart diseases. Parkes et al. (1969) explains that research has found an association between psychological stress and heart disease and arrhythmias (irregular heartbeat), as well as changes in pulse rate,

blood pressure, stroke volume, clotting-time, and cardiac output. Parkes et al. (1969) concluded that these results provide evidence that increased mortality among widowers may be directly related to the emotional stress caused by spousal bereavement. It was further concluded that reduction of stress could lower the risk of mortality. It should be noted that research has found that health status prior to spousal bereavement has very little effect on the mortality increases following bereavement (Lichtenstein et al., 1998). These results were discussed in more detail within the analysis of health factors.

Kaprio et al. (1987) found excesses in mortality for ischemic heart disease during the first month for both widows and widowers. However, for widowers under age 65, mortality excesses remained elevated through the second year. Kaprio et al. (1987) explains that the excesses seen in heart disease may be caused by symptoms of grief. It was explained that sleep disturbance can induce arrhythmia (an irregular heartbeat), causing an increased risk for cardiac arrest. Also, Kaprio et al. (1987) concluded that behavioral changes such as eating, exercise, smoking, and drinking habits might also play a critical role in the increased risk of death from heart disease.

Jones and Goldblatt (1987) reported that the greatest excess in mortality occurred in the widowed who died from car accidents, suicide, or accidental falls. In evaluating these findings, Jones and Goldblatt (1987) carefully analyzed the causes of death to account for any couples who would have died in the same car accident. It was concluded that simultaneous accidents only accounted for a small part of the excess mortality.

In order to further examine the role of homogamy and shared unfavorable environment in mortality among widowers, researchers also looked at the concordance between the cause of death of the widowed and their spouses. Jones and Goldblatt (1987)

found a very small excess in concordance and concluded that shared environment played a very finite role in accounting for the mortality excess. The sample of Parkes et al. (1969) did not include any widowed women, however, the cause of death among the wives of the widowed men were evaluated to analyze the role of homogamy in mortality among the bereaved. Parkes et al. (1969) also reported a tendency for concordance to occur. But it was again stated that while concordance of cause of death may contribute some to the excess in mortality, it is unlikely that homogamy and shared environment play a major role in mortality increase.

#### *Socioeconomic Status*

The only studies in this review that took socioeconomic status into account while studying mortality rates among widowed were Parkes et al. (1969) and Bowling (1994). Bowling's (1994) study, including a sample of 505 widowed persons from the United Kingdom, reported no correlation between social class and mortality. Parkes et al. (1969), whose study only included widowed men 55 years or older, reported that the small numbers in the highest and lowest social class groups made their finding statistically insignificant. Nevertheless, the findings implied a greater risk for those in the highest three social class groups when compared to the two lowest social class groups. Parkes et al. (1969) concluded that social class appears to have very little impact on the mortality risk.

#### *Social Factors*

Bowling (1994) performed a study of correlations between length of survival of the widowed and a variety of social and emotional factors. Data were gathered through death certificates, interviews with bereaved, and interviews with the caregivers and

general practitioners of the bereaved. The social variables in this study did not have statistical significance after adjustments were made for age and sex. And very few of the variables had significance before the adjustments were made. Statistical significance was lacking due to the small sample of only 505 widowed individuals. The non-adjusted variables that were found to have correlations with mortality included the number of living siblings and number of telephone calls received. Bowling (1994) reported that those with no living siblings were more likely to die than those who had living siblings. And those who had no phone contacts with friends or family were more likely to die than those who received phone calls. Bowling (1994) concluded that these findings support the theory that social support may provide a buffer against the effects of bereavement and perhaps, facilitate a decrease in mortality risk.

Helsing et al. (1981) reported that after adjusting for several variables, widowed who lived alone had a significantly greater mortality risk than widowed who lived with at least one other person. It was concluded that these findings further sustain the social support hypothesis, suggesting that good social support may provide a buffer against the effects of bereavement.

#### *Emotional and Mental Factors*

Bowling (1994) also found some emotional factors that were linked to the survival of widows and widowers. She again noted that statistical significance was only achieved before adjustments for age and sex due to the small sample of only 505 widowed persons. Factors related to longer survival included those who: felt aloof or remote, felt some relief after the death of the spouse, felt that in the future they would look forward to doing things again, and those who viewed their relationship as a blend of

both good and bad. Bowling (1994) postulated that perhaps those who reported feeling distant allowed themselves to more adequately grieve, thus helping them to move on and adjust more quickly. Those who do not allow themselves to fully grieve might prolong the grieving process, causing them to experience grief symptoms longer. As stated previously, grief symptoms and stress have been associated with heart disease (Kaprio et al., 1987; Parkes et al., 1969) Variables associated with shorter survival periods included those who: had trouble keeping busy during the day, tended to live in the past, and were evaluated as very depressed. These findings help us to identify those at risk.

### *Physical Health*

Lichtenstein et al. (1998) designed a study using a co-twin analysis. The sample included 5,563 pairs of identical twins (1,897 male pairs and 3,666 female pairs). Only twin pairs in which one twin was widowed and the other was still married were used. Using still married co-twins as a comparison group provided the ability to control for genetic and environmental factors. Prior health history and health habits were measured. Lichtenstein et al. (1998) reported that even after adjustments were made for health factors, increased mortality risk following bereavement was still significant. Lichtenstein et al. (1998) concluded that the homogamy and shared environment theories appear to have little or no role in increased mortality. Thus, increased mortality is likely to be a direct result of the effects of bereavement.

### Critique of Research Methodology

The first element of research design to consider in mortality studies is sample size. Because death is an infrequent event, identifying mortality rates and patterns among the widowed requires an extremely large sample size, especially when several variables

are examined in relation to mortality. In the studies reviewed, Kaprio et al. (1987) used a sample size including 95,647 widowed persons and Jones and Goldblatt (1987) obtained a sample of 21,960 widowed individuals. Because their samples were so large, they were able to analyze many variables with statistical significance.

Bowling (1994) however had a grossly insufficient sample size of only 505 widowed persons. Many of her results lacked statistical significance when controlling for age and sex. As a result, crude statistics were reported creating less reliability and validity in her findings. Lichtenstein et al. (1998), Parkes et al. (1969), and Helsing et al. (1981) all had sufficient samples ranging from 3,275 to 5,563 widowed individuals. Although larger samples would have been preferable, all three studies achieved significant results even when controlling for several variables.

It should also be noted that population samples for all of the studies included primarily white individuals in developed countries, causing analysis of cultural differences to be excluded. The results reported in this literature review should only be applied to populations of white widowed persons living in developed countries.

Another important element to consider in methodology is the use of a control or comparison sample. Once again, the control sample must be very large in order to identify mortality patterns. Three of the studies reviewed here used national age and sex specific mortality rates for comparison with mortality rates of their widowed sample (Bowling, 1994; Jones & Goldblatt, 1987; Kaprio et al., 1987). National mortality rates include all single, divorced, married, and widowed individuals, and thus, do not allow direct comparisons between married and widowed. Using national rates also does not allow control for other variables.

Helsing et al. (1981) controlled for many variables by selecting married individuals who were matched with each widowed individual based on race, age, sex, and type of geographic location (urban, suburban, and rural). Liechtenstein et al. (1998) used a co-twin design, which directly compared mortality of the widowed twins to their married co-twins. By using an identical twin for the comparison group, they were able to control for age, sex, genetics, and some environmental (i.e. being raised in the same home) variables. The controlled comparison groups used by Helsing et al. (1981) and Liechtenstein et al. (1998) created more validity and reliability in their findings.

Thirdly, the measures of variables must be considered. Because the studies required such large samples, the data on age, sex, date of death of spouse, and cause of death were primarily collected using death certificates and census information. Parkes et al. (1969), Jones and Goldblatt (1987), and Kaprio et al. (1987) were unable to collect data on social, physical, emotional, and lifestyle factors because they relied solely on the use of death certificates, census, or other public records.

Helsing et al. (1981) took advantage of a non-official census sponsored by Johns Hopkins School of Hygiene and Public Health, National Cancer Institute, and Washington County Health Department. This survey measured many social and health factors including: age, sex, geographic location (urban, suburban, and rural), education, years in the home, number of persons living in the household, marital history, age at first marriage, smoking status, frequency of church attendance, number of bathrooms in the home (indicator of socioeconomic status), animals in the home, and their source of drinking water. While analyzing the statistical findings Helsing et al. (1981) adjusted for the variables measured to see how they impacted the data, allowing conclusions to be

drawn about mortality and social variables. Helsing et al. (1981) also tracked remarriage activity allowing analysis of mortality rates among the widowed who remarried.

Bowling's (1994) use of a small sample allowed her to be more thorough in her investigation of associations of social support network and emotional adjustment and mortality after widowhood. Although crude statistics were used, this correlational portion of her study provided some insight on the impact of social support and emotional adjustment on mortality. Liechtenstein et al. (1998) took advantage of the Swedish Twin Registry, which provides a wealth of information on the health background of the participants including health-related habits (i.e. smoking and alcohol use) and chronic health conditions (i.e. respiratory disease). This information provided an invaluable analysis of how health status and lifestyle prior to bereavement impacts mortality after bereavement.

### Practical Applications

Researchers provided very little recommendation for practical applications of their research findings. Helsing et al. (1981) suggested that tax and social security laws might be adjusted to encourage remarriage. Currently, social security laws discourage remarriage because it often leads to a decrease in social security benefits (Stanfield & Nicolaou, 2000).

Parkes et al. (1969) recommended reducing the effects of stress through programs designed to provide support and services for the bereaved. Details for developing such programs were not provided in the article. However, support groups for the widowed have been shown to increase social support and positive feelings (Stewart, Craig, MacPherson, & Alexander, 2001). If support groups for the widowed increase social

support, it would be beneficial to study how participation in such a program would affect mortality outcomes.

Bowling (1994) suggested education and awareness among professionals and the general public in order to help identify those at greater risk, particularly those who lack social support. Education of risk factors could be effectively utilized within community programs and institutions such as churches, senior centers, family and social services, and counseling services.

### Conclusion

In summary, research has shown that the widowed have an increased risk for mortality. The mortality risk is more pronounced for men (Bowling, 1994; Helsing et al., 1981; Jones & Goldblatt, 1987; Kaprio et al., 1987), younger widowed (Helsing et al., 1981; Jones & Goldblatt, 1987; Kaprio et al., 1987; Lichtenstein et al., 1998), and widowed who are more recently bereaved (Jones & Goldblatt, 1987; Kaprio et al., 1987; Lichtenstein et al., 1998; Parkes et al., 1969).

Even though the variables of gender, age, and time since bereavement were more thoroughly researched, very little explanation was provided as to why these differences occur. Researchers also neglected to relate how these findings related to the theories and hypotheses that were presented in the articles. There is a need to find out the underlying causes for the gender differences, age differences, and differences in time since bereavement. Knowing the cause for these patterns will help identify the overall cause for the mortality increase.

Although the research on variables such as the cause of death, remarriage, social factors, emotional factors, mental factors, and physical health factors was meager, the

results were valuable in evaluating the theories and hypotheses for increased mortality following spousal bereavement. The findings on cause of death and physical health factors suggested that homogamy and shared environment play little or no role in the mortality increase (Jones & Goldblatt, 1987; Lichtenstein et al., 1998; Parkes et al., 1969). The theory that increased mortality is directly related to the effects of bereavement was supported by the findings in cause of death (Kaprio et al. 1987; Parkes et al., 1969). The results on remarriage and social factors supported the hypothesis that good social support can provide a buffer against the mortality increases after bereavement (Bowling, 1994; Helsing et al. 1981).

Future research should consider using more controlled comparison groups. Also, there is a need for more culturally diverse populations of both developed and undeveloped cultures for their samples. More research on social, physical, and emotional variables that may impact or affect mortality outcomes following spousal bereavement is greatly needed. Specifically, there is a need for research on variables such as remarriage, socioeconomic status, cultural differences, lifestyle factors, physical health, mental health, and emotional adjustment. Until variables associated with mortality are identified, the development of programs to minimize the mortality outcomes cannot fully move forward.

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