Anesthesiologists And The Risk for Suicidal Behaviour: A Note of Concern

By Usha Gurunathan

Physicians may be as susceptible to depression and suicide as general population despite their seemingly healthier lifestyles. The author, an anesthesiologist, has been particularly concerned about the existence of suicidal behaviour amongst anesthesiologists, the specialist doctors with easy access to lethal and addictive drugs, and would like to raise an awareness about this issue.

ABSTRACT

Although physicians seem to have healthy lifestyles, they can be susceptible to the stress of the profession, resulting in substance abuse and depression that may culminate in suicide. Amongst the medical fields, anesthesiology has been considered as a stressful specialty due to the huge responsibility involved in safe care of patients through any surgery as well as the production pressure and time constraints in the work atmosphere. This burden, along with the advanced clinical skills and ready accessibility to potent drugs, increases the risk of addiction and suicide. This article summarises the results from various studies done so far on the factors contributing to the risk of suicide in physicians, in particular anesthesiologists, and discusses the issues associated with detection of the extent of the problem along with some strategies to prevent further increase in the problem. It is intended to raise public awareness about this occupational hazard amongst trainees and consultants in this profession.

Introduction

Suicide has been described as a complex issue with several state-dependent and trait-dependent contributing factors (Hawton, et al., 2009). One of the pathways to suicide relates to the presence of stressful life events and the absence of social supports leading on to depressive and suicidal thoughts and to searching for the means to suicide resulting in the catastrophic event finally (Jenkins, et al., 2000). Physicians may be as susceptible to depression and suicide as general population despite their seemingly healthier lifestyles.

Higher suicide rates were observed among physicians than general population according to the studies from Norway and United States (U.S) (Aasland et al., 2011, Hem et al., 2005, Schenhammer et al., 2004, Aasland et al., 2001). The relative risk of suicide was found to be 1.1–3.4 amongst male doctors and 2.5–5.7 among female doctors compared to that of general population (Lindeman et al., 1996). In contrast, Melzer and colleagues (2008), observed lower suicide mortality in male doctors compared to general population in England and Wales between 2001–2005. The author, an anesthesiologist, has been particularly concerned about the existence of suicidal behaviour amongst anesthesiologists, the specialist doctors with easy access to lethal and addictive drugs, and would like to raise an awareness about this issue. In the following review, the author has attempted to discuss the factors leading to suicidal tendencies among anesthesiologists along with some strategies to prevent worsening of the problem. It is to be noted that these issues may not be exclusive to anesthesiologists and several of them may be applicable to medical community as a whole.

Methods

Literature search using Medline and Embase database was done using the medical subject headings “anesthesiology”, “anesthetist”, “suicide”, “substance-related disorders”, “stress”, “psychological depression”, “physician”, terms connected through Boolean operators. The search was limited to papers from 1990–Oct. 2011 and to articles in English. This produced 127 hits. Of them, 21 were excluded as not being relevant. Forty-eight articles that included comments, personal communications, letters to editor, editorials and 20 articles that included case reports and case series were excluded. Thirteen were excluded as they were duplicated. Two articles dealt with nurse anesthetists. Of the remaining 23 articles, 14 dealt with studies on physicians and suicide, two of them being metaanalysis and systematic reviews on the same topic. Every article’s reference list was searched to get further articles. This produced 20 articles on the main topic of interest including the remaining 12 from the above search. A document on “stress in anaesthetists” released by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) was also included for discussion.

Results

The search did not identify many relevant studies specific to anesthesiologists. Several issues were common between anesthetists and doctors in general and this may be unavoidable. Most of the large-scale studies were outdated and many had methodological limitations. A large-scale cohort study by Alexander and colleagues (2000) on 80,453 doctors reported 45% higher risk of suicide among anesthesiologists compared to internal medicine physicians. They described substance abuse and suicide as “significant occupational hazards for anesthesiologists”.

In a later study on 223 doctors, it was observed that the suicide rate was higher among anesthesiologists, psychiatrists, community health doctors and general practitioners compared to general hospital doctors (Hawton et al., 2001). Lindfors and colleagues (2009) found a rate of 24.5% suicidality amongst all Finnish anesthesiologists. The findings from the studies pertaining to physicians and suicide are presented in Table 1. Several factors contributing to suicide were identified.

1. **Substance abuse**

Substance abuse is a significant risk factor for suicide in the medical profession (Swanson et al., 2003; Schernhammer et al., 2004; Alexander et al., 2000). Suicide may even be the first presentation of this problem (Swanson et al., 2003). The field of anesthesia is more likely to be linked to drug abuse since anesthesiologists deal with potent addictive medications all the time and have an extensive knowledge about them (Greenwell, 2000). Opioids seem to be the most common drug of addiction among anesthesiologists (Bryson et al., 2008). The uniqueness of this specialty is that they administer most of the addictive drugs directly to the patient with minimal supervision and do not prescribe the drugs for someone else to administer (Thomas et al., 2006). There is a speculation that the access factor could be a major reason for physicians choosing this specialty (Weeks et al., 1993). Concern has been raised about the sensitization of the brain due to unintentional exposure to anesthetic agents in the operating room ambience along with the high job stress and the relative ease of accessing the drugs for personal use contributing to drug abuse among anesthesiologists (Gold et al., 2004). Apart from the access factor and environmental exposure, other factors like high stress and behavioral traits can also contribute to addiction (Bryson et al., 2011). Mental health issues and family problems were more common risk factors in Australia and New Zealand according to a survey (Fry et al., 2005). Booth and colleagues (2002) found the incidence of drug abuse to be 1.0% and 1.6% among faculty members and residents in 123 anesthesia departments in U.S. Schernhammer and colleagues (2004) observed that anesthesiologists, psychiatrists and emergency physicians seem to be the most affected by drug abuse whereas Lutsky and colleagues (1994) concluded that anesthesiologists do not show higher overall rate of substance abuse compared to medicine and surgeons.

Alcohol and drug addiction is difficult to detect and treat since the affected individual may be effectively concealing the relevant signs and symptoms from the family or his work place. Usual presentation could be outside work place with minor offences or even major incidents such as suicide (Thomas et al., 2006). Physicians in general may be intentionally concealing the cause of death and underreport suicide of other colleagues due to social stigma (Swanson et al., 2003). Return to work in the same atmosphere for an anesthesiologist could result in relapse after a successful period of abstinence, especially if there is history of previous relapse or similar family history (Thomas et al., 2006). Reentry to practice should be carefully considered on an individual basis since there could be relapses even several years after treatment and recovery according to Bryson and colleagues (2008). Entry into lower risk specialties may be a solution for this issue (Collins et al., 2005).

2. **Stress related causes**

Stress is defined as mental, emotional or physical strain according to AAGBI (1997). Although it has been accepted that a certain amount of stress may be needed in the medical profession since it is a highly demanding field with high expectations and litigations, problems can occur when the stress exceeds the coping abilities. It can result in mental and physical disintegration (AAGBI, 1997). Stress along with inadequate coping mechanisms can lead to job dissatisfaction and impaired decision-making, ultimately resulting in suicide (Thomas et al., 2006). Stress can also lead to alcohol and drug abuse.
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**Authors (Publication year)**
- Aasland et al., (2011)
- Shanafelt et al., (2011)
- Lindfors et al., (2009)
- Dyrbye et al., (2008)
- Meltzer et al., (2008)
- Hem et al., (2005)
- Ohtonen et al., (2002)
- Svarsudd et al., (2002)

**Country and Study Period**
- Norway; 1960–2000
- U.S., 2008
- Finland; March 2004–Oct 2004
- U.S; 2006–2007
- Norway; 1960–2000
- Eng & Wales; Jan 1991–Dec 1993
- U.S; 1989–2001
- Norway; students graduating in 1993 & 1994, average period of observation: 3.6 yrs.
- Finland; 1984–2000
- Sweden; 1993–1999

**Data source**
- Census data relating to education from Statistics Norway
- Members of American College of Surgeons
- Finnish Medical Register
- Mortality data from death registers: both men and women aged 20–64 years all occupations
- Census data relating to education from Statistics Norway
- List obtained from the Office for National Statistics
- Physician master file
- Nationwide representative sample from Norway’s medical schools
- Database of Finnish Medical Association covering deaths of all medical doctors
- Survival data on 26086 physicians from official records

**Study design**
- Data linked to data on 14 main causes of death; Measure: MRR
- Cross sectional survey; questions on SI and use of mental health resources along with screening tool for depression and assessments of burnout and quality of life
- Cross sectional 2007 and longitudinal 2006–7 cohort study. Measure: prevalence of suicidal ideation in past year and its relationship to burnout, demographic characteristics and quality of life
- Cross sectional questionnaire to all Finnish anesthesiologists
- Psychological autopsy study of 38 working doctors who died by suicide
- Postal questionnaire sent to medical students last term of medical school, at the end of internship year and 2–3 years later.
- Database of Finnish Medical Association covering deaths of all medical doctors
- Mortality data & causes of death (for deaths till 1997)

**Main findings**
- all cause mortality for doctors from 1960 to 2000; mortality in doctors compared to general population for all causes of death except suicide.
- Response rate: 31.7%. Suicidal ideation 1.5–3.0 times more common among surgeons >45 years. 26% with recent SI had sought medical help while 60% were hesitant to seek help. 1 in 16 surgeons reported SI during the previous year.
- 22.4% of all respondents reported having suicidal ideation and 2.1% had seriously planned suicide.
- 50% of students experience burnout and 10% experience suicidal ideation in medical school. Burnout associated with increased chances of suicidal ideation later.
- Highest PMR (164) for health professionals followed by PMR (133) agricultural workers; among physicians: suicide was important cause of mortality as opposed to lower suicide mortality than in general population.
- Suicide rate in 1990s for general population and graduates than 1980s; Physicians suicide rate higher than general population.
- Anaeasthesiologists had younger mean age at death than did interns and all other physicians. No difference in age specific mortality between three groups.
- 28 (6.4%) reported suicidal planning in their postgraduate years. 8% had previous suicidal thoughts. Predictors of suicidal planning were depressive symptoms and vulnerable personality traits.
- SMR for anaesthesiologists are lower than other specialists; 17% suicide rate among anaesthesiologists compared to 2% general population.
- Crude mortality rate among anaesthesiologists 26% lower than all physicians; After adjusting for differences in age, gender, anaesthesiologists 46% higher mortality than other specialties.

**Table 1: Main findings of studies published on physicians and suicidal behavior between 1990–Oct 2011**

<table>
<thead>
<tr>
<th>Authors (Publication year)</th>
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<th>Data source</th>
<th>Study design</th>
<th>Main findings</th>
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<td>Aasland et al., (2011)</td>
<td>Norway; 1960–2000</td>
<td>Census data relating to education from Statistics Norway</td>
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<td>Shanafelt et al., (2011)</td>
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<td>Lindfors et al., (2009)</td>
<td>Finland; March 2004–Oct 2004</td>
<td>Finnish Medical Register</td>
<td>Cross sectional questionnaire to all Finnish anesthesiologists</td>
<td>22.4% of all respondents reported having suicidal ideation and 2.1% had seriously planned suicide.</td>
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<td>Dyrbye et al., (2008)</td>
<td>U.S; 2006–2007</td>
<td>Students were invited from 7 medical schools</td>
<td>Cross sectional 2007 and longitudinal 2006–7 cohort study. Measure: prevalence of suicidal ideation in past year and its relationship to burnout, demographic characteristics and quality of life</td>
<td>50% of students experience burnout and 10% experience suicidal ideation in medical school. Burnout associated with increased chances of suicidal ideation later.</td>
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<td>Meltzer et al., (2008)</td>
<td>England, Wales; 2001–2005</td>
<td>Mortality data from death registers: both men and women aged 20–64 years all occupations</td>
<td>Measure: PMR, SMR</td>
<td>Highest PMR (164) for health professionals followed by PMR (133) agricultural workers; among physicians: suicide was important cause of mortality as opposed to lower suicide mortality than in general population.</td>
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<tr>
<td>Hem et al., (2005)</td>
<td>Norway; 1960–2000</td>
<td>Census data relating to education from Statistics Norway</td>
<td>Census data linked to suicide</td>
<td>Suicide rate in 1990s for general population and graduates than 1980s; Physicians suicide rate higher than general population.</td>
</tr>
<tr>
<td>Katz et al., (2004)</td>
<td>U.S; 1989–2001</td>
<td>Physician master file</td>
<td>Measure: crude mortality rate and age specific death rates among 3 special groups: anesthesiologists, internists and all other physicians</td>
<td>Anaesthesiologists had younger mean age at death than did interns and all other physicians. No difference in age specific mortality between three groups.</td>
</tr>
<tr>
<td>Tyssen et al., (2004)</td>
<td>Norway; students graduating in 1993 &amp; 1994, average period of observation: 3.6 yrs.</td>
<td>Nationwide representative sample from Norway’s medical schools</td>
<td>Postal questionnaire sent to medical students last term of medical school, at the end of internship year and 2–3 years later.</td>
<td>28 (6.4%) reported suicidal planning in their postgraduate years. 8% had previous suicidal thoughts. Predictors of suicidal planning were depressive symptoms and vulnerable personality traits.</td>
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<td>Ohtonen et al., (2002)</td>
<td>Finland; 1984–2000</td>
<td>Database of Finnish Medical Association covering deaths of all medical doctors</td>
<td>Measure: age standardised mortality rate</td>
<td>SMR for anaesthesiologists are lower than other specialists; 17% suicide rate among anaesthesiologists compared to 2% general population.</td>
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MRR-Mortality rate ratios; PMR-Proportional mortality rate; SI-suicidal ideation; SMR-Standardised mortality rate.
Nyssen and colleagues (2008) believe that it is the long-term burnout more than the stress that causes significant problems for most anesthesiologists. Anesthesiologists seem to encounter three different forms of difficulties in their practice: complex medical conditions, work overload and difficult ethical decisions (Larsson et al., 2007). Seely (1996) describes anesthesia as a stressful specialty. Predisposing factors to chronic stress in anesthetic practice are long and irregular working hours, frequent night calls leading to sleep deprivation (Alexander et al., 2000; AAGBI, 1997) need for uninterrupted vigilance (Alexander et al., 2000), feeling powerless to control the situation at work and in interaction with the surgeons: unpredictable emergency work along with working over limits to achieve targets and time pressure (AAGBI, 1997). Anesthesiologists work in isolation, especially those in private practice.

### Table 1: Continues

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<td>Aasland et al., (2002)</td>
<td>Norway; 2001</td>
<td>Master file of Norwegian Medical Association</td>
<td>Survival analysis with data on 10387 specialists= 574,065 man-yrs</td>
<td>No difference in mortality rates between anaesthesiologists, pediatricians and other specialists.</td>
</tr>
<tr>
<td>Hawton et al., (2001)</td>
<td>England &amp; Wales; 1991–1995</td>
<td>NHS Doctors list of doctors who died by suicide, population at risk based on the department of health manpower data</td>
<td>Retrospective cohort study; Measure: Suicide rates calculated by gender, age, specialty and time period. SMR adjusted for age and sex</td>
<td>Suicide rate in female doctors higher than general population (SMR: 2.01; 95% CI: 0.97–3.03) and rate in male doctors less than that of general population (SMR 66.8; 95% CI 46.6, 87.0). Anaesthesiologists, community health doctors, general practitioners and psychiatrists higher rates than general medicine doctors.</td>
</tr>
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<td>Tyssen et al., (2001)</td>
<td>Norway; students graduat- ing in 1993 &amp; 1994, average period of observation: 3.6 yrs</td>
<td>Nationwide representative sample from Norway’s medical schools</td>
<td>Postal questionnaire sent to medical students last term of medical school, at the end of internship year and 2-3 years later</td>
<td>Lifetime prevalence of suicidal thoughts among last term medical school students: 43%. 8% planned suicide and 1.4% suicide attempts.</td>
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<tr>
<td>Alexander et al., (2000)</td>
<td>U.S; 1979–1995</td>
<td>Physician Master file database</td>
<td>Cohort of 40,212 interns frequency matched to 40,424 anaesthesiologists by gender, decade of birth and citizenship; Measure: SMR</td>
<td>SMR for all physicians were below 1.0 except for suicide. All cause mortality ratios, risks of death due to cancer and heart disease were similar between both groups; Anaesthesiologists had increased risk of death from suicide [Rate ratio: 1.45 (1.07–1.97)], drug related death, death from cerebrovascular disease and other external causes compared to internists.</td>
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<tr>
<td>Hem et al., (2000)</td>
<td>Norway; 1993</td>
<td>Members of the Norwegian Medical Association</td>
<td>Questionnaire on suicidal thoughts sent to the members; Response rate: 72%</td>
<td>Lifetime prevalence ranged from 51.1% for feelings of worthlessness to 1.6% for suicidal attempt. These thoughts were not attributed to working conditions.</td>
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<tr>
<td>Frank et al., (1999)</td>
<td>U.S; questionnaire sent between September 1993–Oct. 1994</td>
<td>Women Physicians’ Health study results were used</td>
<td>Responses to questionnaire on self reported depression and suicidal attempts. Prospective cohort study on 21,943 doctors. Comparison of cause specific mortality with general population. Measure: SMR</td>
<td>1.5% of US women physicians reported having attempted suicide, 29.5% reported having history of depression. This is similar to other US women.</td>
</tr>
<tr>
<td>Juel et al., (1999)</td>
<td>Denmark; 1973–1992</td>
<td>Membership register of Danish Medical Association</td>
<td>Cause specific mortality in NHS hospital consultants</td>
<td>Doctors’ mortality lower than general population. SMR for suicide among female doctors: 1.7 (95% CI: 1.1–2.2), male doctors: 1.6 (95% CI: 1.4–1.9). Excess suicide rates due to poisoning.</td>
</tr>
<tr>
<td>Carpenter et al., (1997)</td>
<td>U.K; 1982–1992</td>
<td>Department of Health records and follow up through NHS central register</td>
<td>Measure: SMR and Rate ratios for comparison with rates in all consultants</td>
<td>Death rates from accidental poisoning among male consultants significantly higher than general population (SMR 227), two fold increase death from accidental poisoning mostly due to barbiturates; death from injury and poisoning in female consultants 80% higher than women; Excess of suicide in female anaesthesiologists (SMR 405).</td>
</tr>
</tbody>
</table>

MRR: Mortality rate ratios; PMR: Proportional mortality rate; SI: Suicidal ideation, SMR: Standardised mortality rate.
Practising in isolation as well as not sharing concerns and stresses can potentially affect concentration and clinical judgment leading to errors (Kam et al., 1997). The issues with time management are: considerable overtime, difficulty in getting a break or time for non-clinical tasks, frequent changes in work during the day and the risks taken as a consequence of unplanned tasks (Gaba et al., 1994). There is often a need to make a rapid but safe decision in critical situations (Larson et al., 2010). This can occasionally force anesthesiologists to deviate from standard safety guidelines.

Trainee anesthesiologists also perceive a feeling of insufficiency and loneliness due to the high demands of the training and difficulty of their role (Larson et al., 2006). Out of the trainees at different levels, third year trainees experience higher stress due to the sudden increase in responsibility of managing cases on their own (Gaba et al., 1994). Bias and discrimination amongst the peers and consultants is also the cause of stress in female registrars (Greenwell, 2000). According to Swanson and colleagues (2003), among female doctors, occupational stress such as dealing with sufferers, issues of death and work-life balance have been suggested as risk factors for suicide. The perception of stress also depends on the dynamic interaction of their personal, social and biological resources that can act as a buffer against high job demands (Nyssen, et al., 2008).

Depression
Depression is considered to be the major risk factor for suicide in doctors. It can have physical, family, professional and patient-safety consequences (Rose et al., 2010). The difference between other clinical specialities and anesthesia is that, often, the valuable service provided by anesthesiologists goes unrecognised and unappreciated in comparison to other medical specialists, especially surgeons, due to the brief contact period with their patients. This can increase the frustration with their careers among anesthesiologists. Data on the prevalence of depression among anesthesiologists are not available (Rose et al., 2010), although the rate in physicians is almost comparable to that in general population (Center et al., 2003).

Miscellaneous factors
Other predisposing factors to depression and suicide among medical practitioners in general, are career change as at the beginning of the training or retirement planning that involves a lot of adjustments, poor mental health, family history or personal history of psychiatric illness, sexual abuse, domestic violence or alcohol abuse (Frank et al., 1999), marital stress and financial losses (Swanson et al., 2003), bereavements, personal illness or job loss, life styles that doctors are expected to maintain (AAGBI, 1997) and fear of litigation due to medical negligence.

Reluctance to seek professional help and self-prescription practices are significant issues among medical practitioners (Swanson et al., 2003). The reluctance could also be due to the fear of negative consequences on their practice, such as loss of medical board registration, insurance issues, problems with job seeking, loss of respect among colleagues and breach of confidentiality. The Type A personality is seen more often among physicians along with status insecurity, anxiety and time urgency, all of which predispose them to stress (Thomas et al., 2006). The majority of physicians who died by suicide had psychiatric disorders according to a study by Hawton and colleagues (2004). Pre-existing affective disorders among susceptible physicians play a more important role than occupational stressors in predisposing them to suicide (Center et al., 2003).

Discussion
The existing studies do not necessarily give a true picture of the problem since there could be underreporting of events, publication bias, a variety of definitions for suicide and cases where it is difficult to pinpoint the accurate cause of death (Lindeman et al., 1996). There could be loss to follow up in an observational study due to the residents moving from one hospital to another (Fleisher, 2000). Also the information could have been gathered mainly from the treatment programs that cater to physicians who have confirmed drug addiction (Lutsky et al., 1994). From the literature, it was not certain if anesthesiologists have highest suicide rate as compared to other specialties, but it was evident that these specialists have a high risk of substance misuse that along with depression are well-established risk factors of suicide.

Strategies to prevent suicides among anesthesiologists
Suicidal behavior can be managed and suicides may be prevented if appropriate measures are implemented at an early stage. Anesthetic staff could be educated to recognize and treat depression and substance misuse among their colleagues and patients respectively, so that treatment can be initiated early enough. General practitioners may be lacking knowledge about depression or fail to screen patients with depression that could lead to non-treatment resulting in suicide (Mann et al., 2005). There should be formal departmental policies to deal with the affected individuals in a confidential manner. The relevant college, organisation or work place should provide psychological, professional and financial support to the physicians, who have been identified as drug users and those who have attempted suicide. They are likely to encounter difficulties in re-establishing their practice.
Means restriction has been described as an important measure to prevent suicides (Mann et al., 2005). Departmental staff can identify at risk individuals and can act as organizational gatekeepers, thereby enabling early detection and appropriate referral (Mann et al., 2005). Precautions like strict recordkeeping for drugs in the operating theatres and wards, can restrict the access to narcotic drugs and improve accountability of the doctor or other medical staff. There could be a formal screening program for depression and suicide risk on a regular basis. The organisation could provide specialists’ counselling and mentoring for the trainees (Nyssen et al., 2003) and the consultants in need of help and support. Anesthetic training program should involve promoting coping strategies for anesthesiology trainees (Larsson et al., 2010). Educating trainees about the consequences of substance abuse may increase the number of anesthesiologists seeking treatment (Rose et al., 2010). Anesthesiologists should learn to prioritize between tasks and delegate jobs to others when there is work overload (Larsson et al., 2010). Departmental meetings to discuss incidents and major misadventures in the operating theatre can restrict the access to narcotic drugs in the operating theatres and wards, thereby enabling early detection and appropriate referral (Mann et al., 2005).

References


