



# ***Farmers' Suicides in India – A Methodological and Thematic Analysis in the State of Maharashtra***

by Alexandra Höfle

***WATER FOOD DIABETES AYURVEDA GENETICS POVERTY YOGA STDS HISTORY SEX  
SOCIETY FAMILY PLANNING CASTE GENDER RIOTS RELIGION HEALTH  
DEMOCRACY FLOODING WASTE-MANAGEMENT UNANI PSYCHOLOGY FOLK  
MEDICINE AFFIRMATIVE ACTION GLOBALISATION BIOCHEMISTRY OLD AGE  
REPRODUCTIVE HEALTH MALARIA POLICY HIV AIDS WHO MEDICOSCAPES  
COLONIALISM PHARMACY RELIGION LEPROSY BOTOX DEHYDRATION NGOs***

**FARMERS' SUICIDES IN INDIA:**  
**A METHODOLOGICAL AND THEMATIC ANALYSIS**  
**IN THE STATE OF MAHARASHTRA**

**MASTER THESIS**

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# STATUTORY DECLARATION

For submission to the Examination Committee

regarding my Master's Thesis with the title:

*"Farmers' Suicides in India:*

*A Methodological and Thematic Analysis in the State of Maharashtra"*

I declare that

- 1) It is the result of independent investigation.
- 2) It has not been currently nor previously submitted for any other degree.
- 3) I have not used sources other than the ones mentioned in the bibliography. Where my work is indebted to the work of others, I have made acknowledgments.

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Date

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Signature

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# ABSTRACT

Suicide is a global phenomenon resulting in hundreds of thousands of deaths each year. Worldwide, suicides are particularly frequent in low- and middle-income countries. India – more precisely specific states of India such as Maharashtra – are suffering from a particular burden as not only the general mortality rates but also the rates of farmers' suicides rank among the highest in the world. Although reasons for suicides are considered to be multifaceted and shaped by wider social or cultural conditions, qualitative research on suicides is scarce. On the contrary, mainly quantitative research based on statistics is prevalent.

With the aim of assessing the current state of research on farmers' suicides in the state of Maharashtra, this thesis analyzes previous quantitative and qualitative studies on this phenomenon. In addition to a methodological examination of existing studies a thematic investigation is conducted in order to make recommendations on future research.

The (systematic) literature review reveals that also in the context of farmers' suicides in Maharashtra research is predominantly quantitative with only a few qualitative and hybrid studies (i.e. those studies using both quantitative and qualitative methods). Altogether, 22 quantitative, three qualitative and four hybrid studies were analyzed. Regardless of their approach these studies mainly analyze the reasons for farmers' suicides, the characteristics of the deceased farmers and make suggestions for future improvements in the agricultural sector. Concordant with former studies on farmers' suicides in India, this thesis' analysis identifies young male and indebted farmers who cultivate cash crops and have no irrigation as the most vulnerable to commit suicide.

The consideration of this thesis' findings in a wider theoretical context illustrates that the old debate between quantitative and qualitative research dating back to Durkheim and Tarde is still prevalent. Even today and with focus on farmers' suicides in Maharashtra, a lack of individual aspects in statistical calculations of suicide rates can be found. In addition, the performed analysis reveals that by employing a highly structured study design and statistical computations quantitative studies construct a phenomenon which might not reflect the real situation. Qualitative studies, on the other hand, are found to offer additional explanations but their results lack any validation and generalizability.

As a consequence of these findings, this thesis proposes a mixed methods approach linking the advantages of both quantitative and qualitative methods. Especially qualitative studies on farmers' suicides in Maharashtra must be fostered in order to gain a more detailed understanding and knowledge of this complex phenomenon.

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# ABBREVIATIONS AND ACRONYMS

ADSI	Accidental Deaths and Suicides in India
CMC	Christian Medical College
Bt (cotton)	<i>Bacillus thuringiensis</i> (cotton)
GIPE	Gokhale Institute of Politics and Economics
GM (seeds)	Genetically Modified (seeds)
HDI	Human Development Index
HYV	Highly Yielding Variety
IGIDR	Indira Gandhi Institute of Development Research
IPC	Indian Panel Code
MHDR	Maharashtra Human Development Report
MSCCGMFL	Maharashtra State Cooperative Cotton Growers Marketing Federation Ltd
NCRB	National Crime Records Bureau
NGO	Non-Governmental Organization
NIMHANS	National Institute of Mental Health and Neurosciences
NSS	National Sample Survey
NSSO	National Sample Survey Organization
RGI	Registrar General of India
SMR	Suicide Mortality Rate
TISS	Tata Institute of Social Sciences
WHO	World Health Organization



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# 1. INTRODUCTION

## 1.1 Motivation

Suicide is a global phenomenon resulting in hundreds of thousands of deaths each year. Often suicide is attributed to mental disorders or “*moments of crisis with a breakdown in the ability to deal with life stresses*” (WHO 2014). However, it must be emphasized that suicides are multifaceted and cannot be regarded only as an individual action but as affected by wider social or cultural circumstances (Staples 2012). As a result, suicide is of public concern and recognized as a public health priority (Staples and Widger 2012; WHO 2014).

In spite of the fact that suicides occur globally, there are certain geographical as well as social patterns which are evident. For instance on a global scale, suicides are predominantly recorded in low- and middle-income countries and in young age groups (WHO 2014). Furthermore, with regard to differences in occupational groups, it is argued that farmers<sup>1</sup> constitute a high risk group (Behere and Bhise 2009; Milner et al. 2013). This elevated risk among farmers is due to their access to lethal means as well as social and economic disadvantages (Milner et al. 2013). Farmers are, for instance, exposed to fluctuations in commodity markets, the uncertainty of weather patterns as well as the tendency of agriculture becoming increasingly unremunerative. Moreover, due to living in rural areas, farmers often lack in even basic health care infrastructure. Especially in India, Sri Lanka, the United States of America, Canada, the United Kingdom and Australia, farming has been identified as one of the most dangerous industries regarding suicides (Behere and Bhise 2009).

India is suffering from a particular burden with respect to suicidal deaths: With 170,000 suicides<sup>2</sup> annually, the South Asian state has the second highest suicide death rate worldwide (Patel et al. 2012; WHO 2014). In addition, a comparatively large part (4.3%) of India’s suicides are those committed by farmers; about 30% of them are in the age group of 15 to 29 years (Mayer 2011; Nagaraj 2008; NCRB 2014, 182; NCRB 2015, 266). Suicide mortality rates (SMRs) of farmers are even higher than the national suicide rate, and still these numbers are considered to underestimate the real burden (Nagaraj 2008). This already severe situation is aggravated by the fact that agriculture still constitutes the only source of livelihood for about two thirds of India’s population, offering employment options to more than half of its work force (Behere and Behere 2008). Yet not all states of India are equally affected. There

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<sup>1</sup> Farmers in India comprise “*those who own and work on field (viz. cultivators) as well as those who employ / hire workers for fieldwork / farming activities*” (NCRB 2015, 266).

<sup>2</sup> In India, according to the NCRB (2014, 2015), a suicide must fulfill three aspects: (i) it must be an unnatural death, (ii) the desire to die must stem from the person him- or herself, and (iii) a cause to end one’s life must exist. Moreover, suicide and attempt to commit suicide has been considered as a criminal act until December 2014 (Jain 2014; Mayer 2011; Rao 2012). Yet it must be pointed out that in general no homogenous meaning of the term ‘suicide’ exists (Douglas 1966, 1967).

are certain states which account for the largest number of suicides in the country: These are Andhra Pradesh, Chhattisgarh, Karnataka, Kerala, Madhya Pradesh and Maharashtra (Kennedy and King 2014; Nagaraj 2008; Radhakrishnan and Andrade 2012).

Research on suicide is performed by various scientific disciplines, in particular by psychologists (e.g. Radhakrishnan and Andrade 2012), public health researchers (e.g. Mayer 2011), and sociologists (e.g. Durkheim 1951). Common to all is the prevailing usage of statistics and quantitative data in identifying certain patterns in suicide (Carey 1993; Kral, Links, and Bergmans 2012; Tatz 2005). Hence, research on suicides in psychology is mostly concentrated on the individual, his or her emotions as well as biological or genetic causes. From a public health perspective risk factors of suicide, access to lethal means and strategies for suicide prevention are particularly crucial (Wray, Colen, and Pescosolido 2011). Sociological research, on the other hand, is more concerned with social or ecological aspects surrounding suicide. According to these disciplines, suicide involves intention, personal agency as well as knowledge about the fatal outcome (Münster and Broz *forthcoming*). Such a definition rests on Durkheim's (1951) description of suicide. By trying to explain the increase of suicides in the context of modernity, he proposes a four-fold typology of suicide differentiating between (i) egoistic, (ii) altruistic, (iii) fatalistic, and (iv) anomic suicide. Durkheim (1951) established these categories on the basis of two forces (i) integration, i.e. care or loyalty, and (ii) regulation, i.e. guidance or monitoring, both resulting from social ties (Tomasi 2000; Wray, Colen, and Pescosolido 2011; cf. Chapter 3.2.2).

Anthropological studies on suicide, on the other hand, are only few in number. This might be attributed to their different focus and research methodology: Understanding suicide from an anthropological perspective involves the analysis of (i) social forces which might lead to suicide, and (ii) social meanings of suicide in particular contexts (Staples 2012). A particular challenge for ethnographic studies is their demarcation of the predominant clinical understanding of suicide. Yet, this delineation offers a valuable advantage since anthropological studies do not only investigate the phenomenon of suicide but also their representation in the specific local contexts as well as by authorities (Münster and Broz *forthcoming*). Hence, suicide in anthropological terms must be understood not as being perceived universally but as located in a broader framework comprising several parameters such as social, political, economic, religious, and cultural aspects (e.g. Münster 2012, 2014; Rao 2012; Staples 2012; Vasavi 2012).

Similar to sociology, anthropology also draws on Durkheim, partially using his four-fold theory as explanatory categories (e.g. Mohanty 2005). However, as Staples (2012) points out, an anthropology of suicide must go beyond what Durkheim proposed. Durkheim was limited to the extent that he developed his theory in a Western context, and regarded cultures as being homogenous. Moreover, Staples (2012) suggests the following three steps when studying suicide anthropologically. These are the identification of (i) culturally shared norms about sui-

cide, (ii) motivations for suicide which might reflect broader social values, and (iii) wider cultural beliefs on, for instance, life after death. This also involves the investigation of social contexts and conditions which shape suicide archetypes and meanings. In order to identify all realities of suicide simultaneously, language is a crucial aspect. Being aware of local notions and terms of suicide enables the researcher to detect interpretations by the society or health professionals as well as to go beyond prevalent categories (Chua 2012, 2014; Staples and Widger 2012). With respect to methodology, anthropologists must rely on their intuitive understanding as well as ethnographic fieldwork including participant observation and interviews in order to gather information from survivors of self-harm and relatives (Münster 2012; Staples 2012; Tatz 2005). Most anthropological studies on suicides were in fact based on ethnographies.

## 1.2 Aims and Objectives

This thesis aims to outline the current state of the art of research on farmers' suicides in Maharashtra, India. More precisely, it investigates and assesses the existing body of literature on the phenomenon in this particular state, trying to distinguish between studies predominantly relying on quantitative and qualitative research methods<sup>3</sup>, respectively. Similar to what has been described above, the hypothesis is tested whether despite the importance of cultural aspects in health and suicide (cf. Carey 1993; Kral, Links, and Bergmans 2012), quantitative research is prevailing in this context too. In addition to that, further focus is put on the particular methodology used in both quantitatively and qualitatively oriented approaches as well as the findings according to these diverging methods. Based on this analysis, this thesis assesses to which extent current research on farmers' suicides in the state of Maharashtra is lacking and which aspects should be addressed in the future.

To the best of my knowledge, such a meta-level analysis has not yet been performed – neither on Maharashtra nor India. In this context, Maharashtra – a state with a total of 2,568 farmers' suicides in 2014, in comparison to 5,650 all over India (NCRB 2015, 267) – is a highly valuable study area. This is due to the fact that the majority of its population is still working in agriculture (mainly cotton cultivation), and that because of its large number of farmers' suicides sufficient and adequate scientific studies are available. It is expected that

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<sup>3</sup> In this thesis, quantitative research comprises all studies which aim at providing universal laws using standardized procedures. Furthermore, these studies attempt to be objective and representative using large sample sizes within a rather narrow, structured study setting. Qualitative research, on the other hand, incorporates all studies which consider individual characteristics of social phenomena and try to understand these from the perspective of acting subjects (cf. Chapter 3). In addition to that there is also mixed methods research – an approach which links quantitative and qualitative methods aiming at a more detailed account of certain phenomena. Although such a combination of methods exists and there are also other similar discriminations prevalent, the distinction between quantitative and qualitative research is chosen deliberately. The reason for this is a more straightforward analysis and comparability between both approaches.

such a study is transferable also to other states of India as well as that it is possible to draw conclusions with respect to other scales (i.e. one village versus several states).

To achieve these thematic aims, a literature review of existing studies has to be conducted. Suitable studies on farmers' suicides in Maharashtra must be selected and classified according to their methodology into quantitative and qualitative studies or those combining both methods. As a next step, these publications must be tested for their methodology and study designs with the aim of identifying common characteristics and patterns. Secondly, the findings according to approach must be elaborated and compared. As a third step, the differences with respect to methodology, on the one hand, and resulting findings, on the other hand, must be investigated, and potential academic voids must be defined.

Keeping these objectives in mind, the thesis aims to answer the following research questions:

- How can the current state of research on farmers' suicides in Maharashtra be assessed?
- How do quantitative and qualitative studies analyze farmers' suicides?
  - How are these studies organized and which focus do these studies have?
  - Which shortcomings or benefits result from the specific research design and methods?
  - How could a combination of both, quantitative and qualitative, studies look like?
- How should farmers' suicides in the state of Maharashtra be studied in the future?

On the basis of these objectives the thesis is structured as follows: The subsequent second chapter outlines the current state of the art on suicides and particularly farmers' suicides in India. The next chapter introduces the study site Maharashtra and important geographic and socio-demographic aspects. Additionally within this third chapter, the theoretical framework as well as the methodology of this thesis are outlined and explained. Based on this information, the following two chapters present and discuss the results deriving from the methodological and literature research. Finally in chapter six, a conclusion is drawn.

## 2. STATE OF THE ART

This chapter identifies the current situation of suicides and farmers' suicides in India. First, general suicides in India are reviewed distinguishing between quantitatively and qualitatively based studies. Then, the focus is narrowed down to farmers' suicides where again both approaches are explained. The dualism between quantitative and qualitative research is chosen deliberately in order to facilitate the comparability between the findings of both approaches. In general, it must be pointed out that also mixed methods research is considered as an equal third option in respect of research methodologies. Concerning both aspects, each subchapter is further subdivided into the respective methods and main findings of the reviewed studies.

### 2.1 Suicides in India

As described above, research on suicide in India is conducted by various disciplines. The particular methodologies and results of these studies are summarized in the following.

#### 2.1.1 Quantitative Research on Suicide in India

##### *Methods Used in Quantitative Research on Suicide in India*

Quantitative research on suicides in India has predominantly been conducted by scientific disciplines such as psychiatry (e.g. Manoranjitham et al. 2010), economics (e.g. Mishra 2006b), sociology (e.g. Mayer 2011) and forensic medicine (e.g. Mohanty et al. 2007). In these studies, the analysis of suicide is mainly based on autopsy (e.g. Manoranjitham et al. 2010), mortality rates (e.g. Bose et al. 2006), time series (e.g. Mishra 2006b), and existing literature (e.g. Rane and Nadkarni 2014).

Autopsies are performed in order to identify the cause and mode of death. Mohanty et al. (2007), for instance, examined retrospectively more than 2,000 deaths by means of medico-legal postmortems and interviews. Additional information on the deceased and their situation was also obtained using hospital records. Furthermore, depending on the annual income per family, each case was assigned to one of three socio-economic categories. All data were then analyzed statistically. Similar research was also conducted by Manoranjitham et al. (2010). In order to determine risk factors for suicide in India, they used verbal autopsy and a case-control design. The analysis took place in Vellore, Tamil Nadu, an area where a community health program and a health team have been established. The health team interviewed relatives and neighbors of the deceased as well as traditional healers. In total, they examined 100 cases and exactly the same number of controls. The comparison of both cases and controls was aimed at gaining insight into psychological and psychiatric reasons

for suicide. This analysis was conducted by Manoranjitham et al. (2010) using descriptive statistics and logistic regression.

A specific form of verbal autopsy was applied by Patel et al. (2012). This method comprises a structured analysis of the underlying cause of death based on reports of events before death. Patel et al. (2012) gathered data from a nationally representative mortality survey initiated by the *Registrar General of India* (RGI). In this survey more than one million homes were selected randomly from all over India. Causes of death were identified by fieldworkers interviewing relatives of the deceased as well as physicians assessing field reports. The resulting information was analyzed and the total number of suicides, age-standardized rates and risk factors were calculated.

Another prevalent quantitative method used to depict suicides in India is the calculation of mortality and suicides rates. Bose et al. (2006), for instance, analyzed suicides and unintentional injuries by means of computing mortality rates and years of life lost over a period of seven years. They gathered data from a health information system in Vellore, Tamil Nadu, which is based on verbal autopsies. Years of life lost are a means to describe premature mortality by calculating the averaged and potential years a person would have lived. In their study, Bose et al. (2006) used WHO life-tables to calculate these estimates. Moreover, they classified deaths according to age, sex and place of death. Besides suicide rates also time series are calculated. Mishra (2006b), for instance, used data obtained by the *National Crime Records Bureau* (NCRB) of India in order to generate a time series for the period of 1975 to 2001. He calculated age-adjusted mortality rates using census data. The missing information of interim periods between two censuses was defined by an estimated annual growth rate.

Quantitative research on suicides in India is also often based on already existing literature. Rane and Nadkarni (2012) conducted a systematic literature review based on 36 publications derived from databases such as *PubMed* or *Google Scholar*. Also Manoranjitham, Jayajaran, and Jacob (2006) as well as Vijakumar (2010) reviewed the current state of the art with respect to suicides in India. Vijakumar (2010) analyzed all publications published in the *Indian Journal of Psychiatry*, in which his article appeared as well. Also Sharma et al. (2007) conducted an analysis of trends in completed suicides in northern India retrospectively over a period of ten years. They analyzed more than 3,000 cases. In this study, a specific emphasis was placed on the link between socio-economic status and suicide.

### *Main Findings Resulting from Quantitative Research on Suicide in India*

The main findings of these quantitative studies comprise information on the geographic distribution of suicides in India, methods and causes of suicide as well as risk factors and implications. The research revealed that SMRs increased for both, men and women, in the last decades – reaching now a suicide rate of 10.3 per 100,000 (Mishra 2006b; Vijakumar 2010). In his book on *Suicide and Society in India* also Mayer (2011) summarizes the methods and

trends of suicide as well as social and regional patterns. Based on previous studies and his own analyses, Mayer (2011) states that more than 120,000 suicides per year are a sign for a suicide burden. Yet, these suicide cases are not distributed evenly across India. Higher suicide rates were especially reported in the states of Andhra Pradesh, Karnataka, Kerala, Maharashtra, Tamil Nadu and Pondicherry (Mishra 2006b; Nagaraj 2008).

Commonly cited reasons for suicides in India are the poor economic situation, physical or mental illness and disturbed interpersonal relationships (Manoranjitham, Jayakaran, and Jacob 2006; Mohanty et al. 2007; Vijakumar 2010). Based on these reasons, risk factors for suicide and groups vulnerable to suicide have been identified. Generally in developing countries, risk factors comprise the social, economic as well cultural sphere (Manoranjitham, Jayakaran, and Jacob 2006). In India, mental illness, chronic pain, permanent stress, alcohol consumption and unemployment have been determined as aspects commonly associated with suicide (Manoranjitham et al. 2010; Vijakumar 2010). Further parameters were, according to Mohanty et al. (2007), Hindu religion and residence in rural areas. In addition, the study by Manoranjitham et al. (2010) revealed that in the majority of suicide cases the deceased were literate, married and had a lower socio-economic background. Furthermore, they conclude that most suicides result from impulsiveness rather than mental disorder.

Another crucial aspect influencing the vulnerability of suicide risk groups is the depiction of suicides in the media. As a result of regular reporting, suicide is increasingly considered as an accepted alternative (Manoranjitham, Jayakaran, and Jacob 2006). Vijakumar (2010) states that risk groups comprise mainly students, farmers and women. Students and adolescents show, according to Vijakumar's (2010) findings, higher levels of hopelessness and stress. Especially women living in joint families and having a low education are at higher risk. The most vulnerable age group includes young people between 15 and 25 years of age. In agreement with these findings also Sharma et al. (2007) detected high suicide rates for girls in northern India. Furthermore, they identified those having a lower socio-economic status and limited resources as being at greater risk. Farmers' suicides will be described in more detail in the next section of this chapter.

With respect to modes of suicides, it is argued that the used methods are dependent on their availability (Sharma et al. 2007). While in other countries, firearms are relatively common and, hence, a common means for suicides, India is still an agrarian society. Thus, pesticides and fertilizers are readily available. As a consequence, poisoning and hanging have been determined as most common means of suicide reported between 1996 to 2005 (Bose et al. 2006; Mohanty et al. 2007; Sharma et al. 2007).

According to Vijakumar (2010) there are only few studies which exclusively concentrate on prevention strategies. However, what the existing studies reveal is that suicide prevention should be multifaceted, incorporating not only mental health measures but also social as-



pects. Previous measures included, amongst others, the establishment of centers dedicated to suicide prevention, psychiatric emergency services as well as community and medical activities. Moreover, a special training for physicians and other professionals has been recommended. Manoranjitham et al. (2010) point out that it is necessary to place emphasis on the causes of human suffering instead of medicalizing the situation and focusing solely on distress.

### *Assessment of Quantitative Research on Suicide in India*

Since the majority of quantitative studies on suicide in India uses statistical data, many of them analyze the reliability of these statistics. Especially the quality of data on suicides obtained from the NCRB has been analyzed critically. Since there is no other comprehensive source of data, Mayer (2011) concludes that the official NCRB statistics are valuable. Nevertheless, he examined the reliability of these suicide statistics by analyzing, amongst other aspects, international comparisons of suicide data, the regional consistency of the data as well as their stability over time, and also compares official suicide data to data derived from clinical studies. Mayer (2011) states that due to a relative homogeneity of the data – regionally as well as temporally – the official data must be a reliable source, and thus recording a real phenomenon. He attributes the discrepancy between official data and clinical observations to a difference in the decision-making process. According to Mayer (2011), clinicians decide on the basis of probability, while the police who records the official data determines deaths based on the beyond reasonable doubt standard.

In contrast to these conclusions, Staples (2012), Bose et al. (2006), Patel et al. (2012), Rane and Nadkarni (2014) as well as Radhakrishnan and Andrade (2012) found an underestimation of suicide data in India. Radhakrishnan and Andrade (2012), for instance, argue that especially in rural areas data on suicides are incomplete. According to them, this can be attributed to the fact that family members often cite illness or accident as reasons for death as they fear the stigma associated with suicide. This underreporting of suicides due to social stigma and shame has also been confirmed by Manoranjitham et al. (2010) and Mishra (2006b). These studies, furthermore, point out that police records, which are the basis of official statistics, contribute to an underestimation of suicides. As a result, Mishra (2006b) demands an improvement of these data. He also argues that the attribution of single causes to suicides is questionable as suicide is a complex phenomenon. Moreover he calls for a more detailed depiction of suicides in terms of an identification and portrayal of risk groups as well as a more refined apportionment of age groups.

## 2.1.2 Qualitative Research on Suicides in India

### *Methods Used in Qualitative Research on Suicides in India*

In studies on suicides in India, (ethnographic) fieldwork (e.g. Chua 2012, 2014) and analysis of literature (e.g. Staples 2012) were the most commonly used qualitative research methods. Often, field-based research is not the only approach, but complemented by suitable literature. Rao (2012), for instance, focused on the discourse about suicide among development institutions and the media in order to analyze the impact of medicalization, (de)criminalization and the use of statistics on suicide in India. During her two-month fieldwork in Bangalore in 2009, she interviewed psychiatrists, psychologists and lawyers. Since this research stay was not intended to provide sufficient information, she predominantly relied on secondary data<sup>4</sup>. This secondary data included publications from diverse institutions such as the *World Health Organization* (WHO), the *Christian Medical College* (CMC) in Vellore, India, and the *National Institute of Mental Health and Neurosciences* (NIMHANS) in Bangalore, India.

Another anthropological study on suicide in India is offered by Chua (2012, 2014). Based on three years of ethnographic fieldwork in Kerala, India, Chua (2012) describes how people deal with suicide as an ever-present possibility. During her fieldwork she collected tales of suicide and explanatory accounts which she uses to prove her depiction of how suicides are commonly read. Also Parry (2012) conducted an ethnographic study on suicides in India, more precisely suicides by laborers of a steel plant in Bhilai, Chhattisgarh. In order to assess the phenomenon of laborer deaths, he counted suicidal deaths which occurred at this steel plant. In cases where the local population doubted the judgment by the police, Parry (2012) relied on this consensus.

Qualitative studies, which exclusively relied on existing literature, were, for instance, published by Staples (2012) as well as Radhakrishnan and Andrade (2012). In his introduction to the special issue *Suicide in South Asia: Ethnographic Perspectives*, Staples (2012) gives an overview of all other articles published in this issue and reviews the literature on anthropology and suicide. Also Radhakrishnan and Andrade (2012) provide a comprehensive qualitative review of historical, demographic, social and epidemiological factors of suicide in India. Although both authors belong to the field of psychiatry and psychopharmacology, respectively, they offer an objective and wide overview on this topic.

### *Main Findings Resulting from Qualitative Research on Suicides in India*

Qualitative research is often restricted to smaller scales than quantitative studies. In this context, except for some literature reviews, qualitative studies also did not incorporate the whole country in their analysis. In contrast to quantitative research, almost no conclusions can be

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<sup>4</sup> In this context, secondary data includes all data which has not been gathered by the authors themselves (e.g. existing studies, reports, etc.).

drawn concerning suicides and their geographic distribution. However, on the basis of qualitative methods, statements can be made with respect to the methods and causes of suicides as well as the implications resulting from high suicide rates in a society.

Parry (2012), for instance, argues on basis of his study on a steel plant in India that suicide incidences have increased significantly in the last two decades. Yet, he points out that due to uncertainties regarding the cause of death, the establishment of an objective suicide rate is challenging. Besides this lack of objectivity, Parry (2012) as well as Rao (2012) detected an underreporting of suicides. Based on his fieldwork, Parry (2012) even claims that the Indian suicide rate must be up to seven times higher than the official rate. He attributes this underestimation to an anxiety of the police and the existing law, which both contribute to the concealing of suicides. Furthermore, Rao (2012) states that suicides are reduced to numbers. She argues that statistics not only provide a narrow understanding concerning meanings and causes of suicides but also create a certain population. Moreover, Rao (2012) explains that statistics are increasingly used since they enable an interdisciplinary study of suicides in the fields of law, medicine and development organizations.

In respect of methods and causes of suicides, Parry (2012) views both as being connected. For instance, in his study he found that a father hanged himself in the same manner as his son did a few months earlier. Based on these findings Parry (2012) concludes that suicide can be contagious. Further reasons for suicide are, according to Parry (2012) and concordant with other studies (e.g. Manoranjitham et al. 2010; Vijakumar 2010), socio-economic difficulties, illness, indebtedness or alcohol consumption. Concerning risk factors of suicide, Parry (2012) found that suicides of laborers with higher social status and those being more privileged are more frequent. Moreover, Radhakrishnan and Andrade (2012) argue that, in contrast to suicides in Western countries, marriage does not have such a strong preventive effect on suicides and that due to a better social integration, elderly commit less suicide. Furthermore, they found that being a farmer, having personality disorders or a chronic illness reinforced suicides. They conclude that in order to establish successful prevention strategies, an understanding of all these aspects must be given, and preventive measures must be culturally sensitive.

Consequences resulting from high suicide rates are, according to the literature mentioned above, related to a simplification of suicides, political influence on suicides and the social construction of suicide rates. For instance, Rao (2012) states that within the discourse between developmental organizations and the media, representatives of organizations are reducing suicide to medical causes such as mental illnesses. She argues that by doing so they exclude other meanings and causes of suicide. Furthermore, based on ethnographic fieldwork as well as secondary data, Rao (2012) argues that the use of statistics and the debate about a (de)criminalization of suicide in India are responsible for a simplification of suicides and their reasons. Also Chua (2012) explains that by means of a reification of suicide catego-

ries in daily life, for instance by media representations, suicide archetypes and an epidemic reading of suicide evolve. She argues, moreover, that meanings of suicide in her research area of Kerala have been altered over time. Furthermore, she states that now suicides are also connected to struggles for a good life among a growing middle-class. As a result, Chua (2012) emphasizes that Kerala's suicide crisis can be seen as an object of intervention and prevention as well as one of fear and moral power.

A second implication of high suicide rates in India has been identified by Parry (2012). He argues that the representation of suicides is affected by politics. Parry (2012) illustrates this point using farmers' suicides which are portrayed as a major public health issue, while other groups or areas might be equally concerned. Hence, he concludes that farmers' suicides are a product of politics. This deduction leads him to his second observation – the social construction of suicide rates. Parry (2012) claims that the construction of suicide rates starts already with the definition of suicide. The Indian definition of suicide includes the aspect of intentionality as one crucial parameter. Yet, it is problematic to identify intent. Furthermore, it is challenging to differentiate between suicidal, accidental and homicidal death. Another factor which complicates the accurate determination of a death is the fact that suicides have multiple causes. But still the police has to assign one cause which will be included in national statistics (Parry 2012).

## **2.2 Farmers' Suicides in India**

Similar to general suicides farmers' suicides are also intensively researched in India. The most important findings regarding their methodologies and results are described in the following.

### **2.2.1 Quantitative Research on Farmers' Suicides in India**

#### *Methods Used in Quantitative Research on Farmers' Suicides in India*

Quantitative research on farmers' suicides in India comprises, similar to studies on suicides in general, mostly methods such as the calculation of suicide rates or similar statistics (e.g. Mishra 2007, 2014), verbal autopsy (e.g. Behere and Behere 2008), econometric calculations (e.g. Hebous and Klonner 2014), linear regression – for instance to identify correlations between male suicide rates and the proportion of marginal and indebted farmers and of cash crops grown (e.g. Kennedy and King 2014), and the analysis of literature (Mukherjee 2009) or other secondary data (e.g. Nagaraj 2008).

Mishra (2007, 2014) calculated suicide rates per 100,000 people as well as trends in suicide rates for male farmers and non-farmers in the period of 1995 to 2012. In order to compute these rates and to adjust them according to age, he used data provided by the NCRB as well as the Census of India. Moreover, Mishra (2014) distinguished between male farmers and

non-farmers analyzing trends in suicide rates. Another quantitative approach, namely verbal autopsy, was applied by Behere and Behere (2008) in one district of Maharashtra. The main aims of their research were to identify causes of suicides as well as to elaborate intervention strategies. Hence, a survey consisting of more than 50 questions was carried out in the period of one year (2005 to 2006). Behere and Behere (2008) interviewed relatives of farmers and landowners who committed suicide during this time.

An econometric analysis on farmers' suicides in India is provided by Hebous and Klonner (2014). Their study was motivated by their perception of farmers' suicides as an expression of personal misery. As a result, they focused on economic distress among farmers by empirically analyzing the relation between risk, agricultural change and farmers' suicides. Their study concentrates on two Indian states, Maharashtra and Karnataka, over a period of seven years (1998 to 2004). Hebous and Klonner (2014) incorporated suicide statistics from police records, household-level data from the *National Sample Survey* (NSS) as well as meteorological parameters and land use statistics. The combination of all these data aimed at identifying the effects of economic shocks and changes in agricultural patterns as well as the parameters of farmers' suicides.

Another commonly used quantitative method is linear regression of possible influencing factors. Kennedy and King (2014), for instance, used this method in order to examine whether the variation of farmers' suicide rates across India can be attributed to differences in agricultural production. In their analysis they combine an adjusted state-level suicide rate obtained from a previous study (Patel et al. 2012) with cash crop cultivation, indebtedness of farmers as well as the proportion of marginal farmers. Kennedy and King (2014, 2) define marginal farmers as farmers "[...] with landholdings of less than one hectare, who cultivate capital-intensive cash crops". Based on these data, they test the hypothesis that a higher proportion of marginal and indebted farmers in a state is linked with a higher suicide rate (i.e. having a high correlation). This hypothesis is derived from previous qualitative case studies.

Similar to general suicides in India, quantitative studies on farmers' suicides also relied on previous studies and secondary data. A review of literature is, for instance, provided by Mukherjee (2009). Her analysis concentrates on aspects inducing rural devastation. Thus, she accounts for statistics of farmers' suicides, of the most affected regions, the underlying causes of the agrarian crisis as well as earlier interventions and future strategies. Secondary data such as the *Accidental Deaths and Suicides in India* (ADSI) report published annually by the NCRB have been analyzed by Nagaraj (2008). His research aims at detecting magnitudes and trends as well as regional patterns of farmers' suicides in India.

### *Main Findings Resulting from Quantitative Research on Farmers' Suicides in India*

Quantitative research on farmers' suicides in India contributes new findings to the aspects of suicide rates and regional variation, reasons and risk groups, risk management and prevention as well as implications of farmers' suicides. The above mentioned studies agree that farmers' suicide rates increased in the last years, showing even higher rates compared to general suicide rates (Mishra 2007; Mukherjee 2009; Nagaraj 2008). This discrepancy can be attributed to the fact that the number of farmers are declining, whereas the general population is increasing (Nagaraj 2008). Moreover, there is also consensus on the fact that, with almost 85%, male farmers constitute the majority of farmers' suicides<sup>5</sup> (Mishra 2007; Mukherjee 2009; Nagaraj 2008). Yet, disagreement is apparent in respect of the impact of cultivating cash crops such as cotton or oilseed. While the econometric analysis by Hebous and Klonner (2014) revealed that a shift from subsistence to cash crops involves a decrease in male farm suicides, Mishra (2007) detected rising suicide rates in cotton growing states such as Andhra Pradesh and Maharashtra. Relating to regional patterns, certain states and areas of India were identified which show especially high rates of suicide by farmers. These are Maharashtra (above all Vidarbha), Karnataka (above all Deccan, Hyderabad Karnataka), Andhra Pradesh (above all Telangana), Kerala (above all Wayanad, Idduki, Kannur) and Chhattisgarh. Moreover, these areas are characterized as particularly dry and poor regions lacking suitable irrigation (Mishra 2007; Mukherjee 2009; Nagaraj 2008).

Causes of farmers' suicides are analyzed by almost all studies. Consensus is evident regarding the fact that the reasons for farmers' suicides are multifaceted. Nagaraj (2008) emphasizes that the causes of a suicide can only be found in a combination of several parameters. According to him, monocausal explanations of suicide, as provided by the NCRB, reduce suicide to blaming the victim while ignoring larger socio-economic conditions. Nonetheless, there are commonly cited reasons for farmers' suicides which will be summarized here. In many cases, farmers' suicides are linked to the current agrarian crisis in India, which was induced in the 1990s by neoliberal state policies (Nagaraj 2008; Sangamithra 2008). These policies comprised a liberalization of the agricultural market as well as a privatization of the seed sector. Mukherjee (2009) points out that, as a consequence, government subsidies declined, cropping patterns shifted from food to cash crops, and the cultivation of monocultures and the use of pesticides and fertilizers became increasingly common. Hence, farmers were faced with dependency on private moneylenders, higher costs, and an increasing competition due to imports. These aspects in combination with a lack of alternative livelihood opportunities and crop failures due to pest attacks or insufficient irrigation led to indebtedness and distress (Mishra 2007; Mukherjee 2009).

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<sup>5</sup> Since official statistics provided by the NCRB consider only farmers who own land, and only men are eligible to hold a title to land, no statement can be made on female farmers' suicides (Münster 2012, 202; NCRB 2015, 266).

With focus on the Green Revolution, Swaminathan (2010) and Tripathy (2008) provide further reasons for farmers' suicides. Swaminathan (2010) investigates farmers' suicides in respect of malnutrition and interventions by the government. He argues that farmers' distress results from several factors comprising institutional parameters such as a lack of credit or insurance as well as social aspects such as gender discrimination or the dependency on moneylenders. As a third component he mentions government policies which lead to a collapse of the rural economy. Furthermore, Swaminathan states that measures designed for farmers by the government have not considered the cause of farmers' distress. As a result of this, Swaminathan demands an insurance system which incorporates health, crop and live-stock security as well as a nutrition security system.

Tripathy (2008) examines the history of Indian agriculture and its underlying policies since the 1960s. He found that a payment crisis in the 1990s, which resulted in a declining growth of India's economy, led to farmers' suicides. More precisely, he attributes the rising suicides among farmers to an increasing indebtedness due to the fact that India started importing agricultural products such as cotton, edible oils and spices. In addition to indebtedness, Tripathy (2008) also cites increasing costs for cultivation, dependencies on private money lenders and a lack of water as reasons for farmers' suicides in the states of Maharashtra and Andhra Pradesh.

Further factors which led to suicides are the vulnerability of the region in terms of poor soil quality as well as uncertain rainfall and poor returns from cultivation (Mishra 2007; Mukherjee 2009; Nagaraj 2008). Studies in Maharashtra, moreover, identified indebtedness (87% of all cases) as the most common cause of suicide, followed by economic decline (75%) and crop failure (55%) (Behere and Behere 2008; Mishra 2007). Within the group of farmers, marginal and small farmers who were highly indebted were identified as being at greater risk of committing suicide (Kennedy and King 2014; Mukherjee 2009). Kennedy and King (2014) detected a significant relationship between suicide rates and the percentage of marginal and indebted farmers as well as cash crop production. They point out that only in combination these factors account for high levels of suicide. Furthermore, they proved that this link accounts for about 75% of the regional variation of farmers' suicides in India.

With respect to risk management of farmers' suicides, Mishra (2007) refers to several insurance schemes and strategies by the farmers themselves. He states that a crop insurance (*National Agricultural Insurance Scheme*) and a *National Calamity Contingency Fund* have already been established. Furthermore, a weather insurance considering rainfall as well as temperature and a *Farm Income Insurance Scheme* for rice and wheat have been implemented on a pilot basis. Yet, Mishra (2007) clarifies that mostly farmers are unaware of being insured. Moreover, he demands a risk management which addresses credit, prices, income, weather as well as yield risks. Mishra (2007) found alternative strategies by farmers such as non-farm income, crop diversification and inter-cropping. Another way of risk management is

offered by means of relief packages which have been provided to 31 districts in four states. These packages addressed, amongst other aspects, debt relief, additional institutional credit as well as subsidiary income opportunities (Mukherjee 2009). However, Mukherjee (2009) found out that these packages are not comprehensive enough as they only address immediate issues. In addition to that, more suicides might be triggered by desperate farmers in order to obtain compensation money and repay debt. As a result, Mukherjee (2009) asks for additional and extended services including counseling of farmers as well as an acknowledgement of multiple causes of farmers' suicides. Kennedy and King (2012), furthermore, claim that interventions should be targeted at stabilizing cash crop prices and relieving indebted farmers.

Implications resulting from farmers' suicides are found to particularly affect the relatives of the deceased. Mukherjee (2009) emphasizes that widows are faced with the need of compensating the loss of income, and children may be expelled from education or even lose both parents.

### *Assessment of Quantitative Research on Farmers' Suicides in India*

Similar to research on general suicides in India, studies on farmers' suicides also deal with the reliability of (official) suicide statistics. For instance, Behere and Behere (2008) state that the severity of farmers' suicides in Maharashtra can hardly be assessed since suicides are underreported. Also Münster (2012, 2014) considered the effect of suicide statistics in the context of farmers' suicides. He illustrates that these data influence the way farmers' suicides are portrayed. The reason for this can be ascribed to the fact that official statistics on farmers' suicides only include farmers as persons owning land. Hence, other farmers such as women or agricultural laborers are not included. This explanation is also in agreement with the findings by Mukherjee (2009) and Mishra (2014). Mishra (2014), moreover, cites the fear of being socially stigmatized and the fact that suicide is a criminal offense as further reasons for the underreporting of farmers' suicides. Yet, he points out that no differences across other professions are known. Concordant with Münster (2012, 2014), Nagaraj (2008) as well as Kennedy and King (2014) found that farmers' suicides appeared to be a phenomenon among men. Yet, they argue that this must be due to a strict definition of the category 'farmer' and, hence, an undercounting of female farmers. Altogether, Nagaraj (2008) also emphasizes that farmers' suicides as well as general suicides are underestimated. As a consequence of the underestimation of farmers' suicides in suicide statistics, Mishra (2007) demands that the quality of these data must be improved. He suggests an extension of already existing databases to lower administrative units as well as a more detailed differentiation of professions. Yet, he argues that the existing data can be used anyway, for instance, in order to compare wider patterns and trends of farmers' suicides and general suicides across India.



## **2.2.2 Qualitative Research on Farmers' Suicides in India**

### *Methods Used in Qualitative Research on Farmers' Suicides in India*

The most common methods used by qualitative research to address farmers' suicides in India are a qualitative assessment based on existing literature and ethnographic fieldwork. Narayanamoorthy (2006), for instance, analyzed the impact of relief packages for six districts of Vidarbha, Maharashtra. Similar to this study also Rahman (2012) qualitatively examined the status of human rights in the context of farmers' suicides in rural areas of India.

Ethnographic fieldwork has been conducted by Mohanty (2005) as well as Münster (2012, 2014). Mohanty (2005) analyzed more than 60 cases of farmers' suicides in two districts (Amravati, Yavatmal) of Maharashtra in 1998. First of all, he obtained background information on social and economic parameters of the locations where suicides occurred. Then he interviewed officials working in agricultural departments, moneylenders and local traders as well as relatives of the deceased. After he had obtained these qualitative data, Mohanty (2005) compared his findings to Durkheim's theory on suicides.

Münster (2012) focused on the district Wayanad, Kerala, where he examined the reasons for farmers' suicides as well as governmental interventions. He applied a top-down approach, entering the field via a non-governmental organization (NGO). His study comprised the analysis of local and political discourses about farmers' suicides as well as the personal explanations of widows and relatives of the deceased. Furthermore, he also interviewed experts on the agrarian crisis. Münster (2012) emphasizes that an ethnographic study of farmers' suicides is a methodological challenge since the group to be studied is not available and the relevant parameters have to be specified. During another research stay, Münster (2014) interviewed more than 50 widows or relatives of farmers' who had committed suicide. He concentrated on individual life histories and situations and complemented his qualitative understanding by suitable literature.

### *Main Findings Resulting from Qualitative Research on Farmers' Suicides in India*

The main findings derived from qualitative studies on farmers' suicides in India include information on the reasons for farmers' suicides, risk management and prevention strategies as well as implications. Consistent with other studies, Rahman (2012) found that farmers' suicides are especially prevalent in the states of Maharashtra, Andhra Pradesh and Karnataka.

With regard to the causes of farmers' suicides Narayanamoorthy (2006) cites a decrease in the importance of agriculture as the main reason. As a result, crop cultivation is no longer sufficient as the only means of subsistence and farmers are increasingly indebted. Rahman (2012) adds that the decline in agricultural production was induced by the structural adjustment policies in the 1990s. The effect of these policies was a shift from food production to

cash crop cultivation as well as the introduction of genetically modified (GM) seeds, pesticides and fertilizers. Since these new components are cost-intensive, farmers' were forced to take out additional loans. Due to these aspects, according to Rahman (2012), farmers have become more vulnerable. Yet, with reference to Bt (*Bacillus thuringiensis*) cotton, officials working at *Monsanto* contend that the new technology did not evoke farmers' suicides but rather prevented them (Rahman 2012). Also Münster (2012) identified, with respect to the agrarian crisis, the significant decrease in world market prices for cash crops as well as a productivity crash due to an intensive use of fertilizers and pesticides as the main reasons why farmers' debts and suicides rose. Furthermore, Münster (2012) states that farmers' suicides have become a category of state intervention that is also reproduced in the media and in the context of the agrarian crisis. In addition to these findings, Mohanty (2005) states that the majority of farmers who committed suicide in Maharashtra were those holding only small lands and who cultivated cotton. According to him, these farmers were affected by the neo-liberal economic policies, which led to an increasing indebtedness and the introduction of highly yielding variety (HYV) crops. He argues that they were experiencing a rising tendency towards individualization and social alienation.

Risk management and prevention strategies have been assessed by Narayanamoorthy (2006). His study revealed that the relief packages provided to districts in Vidarbha, Maharashtra, were not comprehensive enough since the underlying reasons for the farmers' distress are ignored. For instance, immediate relief was not offered, but instead only partial investments were made in the insufficient infrastructure such as irrigation development programs. Moreover, farmers should be offered additional credit, which is according to Narayanamoorthy (2006) unhelpful since the necessary infrastructure is missing. As a consequence, he demands that the government should announce remunerative prices for crops, establish an emergency center which ensures the supply of required inputs, and check the quality and prices of inputs. Further interventions by the government should include contract farming, which protects farmers from price fluctuations, as well as the remission of loans for marginal farmers. Long-term measures should especially improve rural infrastructures, and if a sufficient infrastructure is established, the supply of institutional credit (Narayanamoorthy 2006).

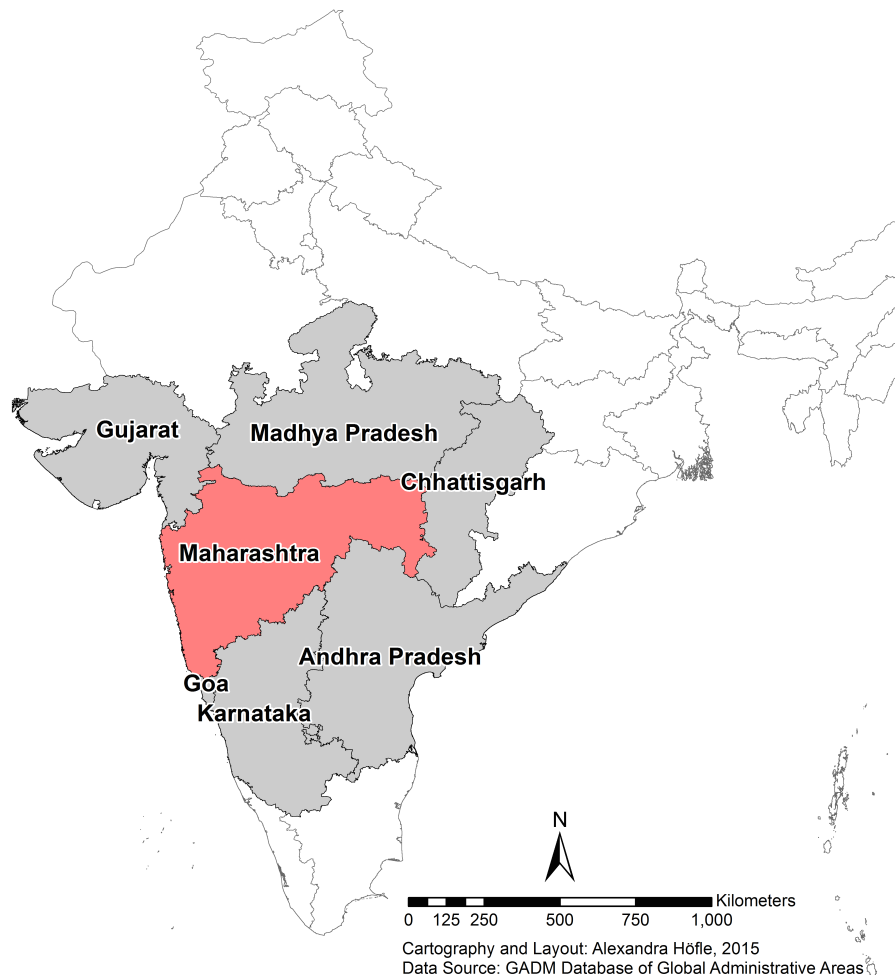
Another crucial finding of qualitative studies refers to the implications of agrarian distress and farmers' suicides. Rahman (2012, 49) argues that "*farmer suicide in India is the most catastrophic and disastrous expression of human rights crisis faced by peasants*". According to him, this is due to an insufficient reaction by the Indian government in terms of relief measures. Also Vasavi (2012) argues that the persisting suicides by farmers illustrate the ignorance of the Indian government towards agricultural conditions in rural areas. Because of this, she states that these suicides can be interpreted as a form of structural violence. Furthermore, Vasavi (2012) also observes a change in the suicides themselves: Previously, sui-

cides were committed in silence, whereas today suicides have become increasingly public. In addition to that, Rahman (2012) points out that the government does not meet its obligations defined by its constitution as well as international human rights treaties. These duties include to guarantee livelihood, food and job security. As a consequence of the neoliberal policies and economic reforms, increasing insecurity led to uncertain futures and hopelessness as well as farmers' suicides. These suicides, in turn, affect the families of the deceased: Widows and children suffer mentally and physically and are forced to work more. In particular, relatives of small and marginal farmers, who do not own title to land are deprived. All these aspects violate, according to Rahman (2012), universal principles of human rights and lead to a human rights crisis. Because of that, he demands interventions by the government, which ensure human rights and promote sustainability in agriculture as well as remunerative prices.

### 3. METHODOLOGY

In this chapter, the study area and the methods of this thesis are explained. First of all, it will be illustrated why the state of Maharashtra is suitable as a case study for farmers' suicides and the methodological analysis of quantitative and qualitative research on the phenomenon. This is done based on geographical, socio-demographic and economic characteristics. The second part of this chapter provides the theoretical framework of this thesis which relies on Gabriel Tarde and Émile Durkheim. Finally in the last part of this chapter, a new methodological approach for the analysis of farmers' suicides in Maharashtra will be developed.

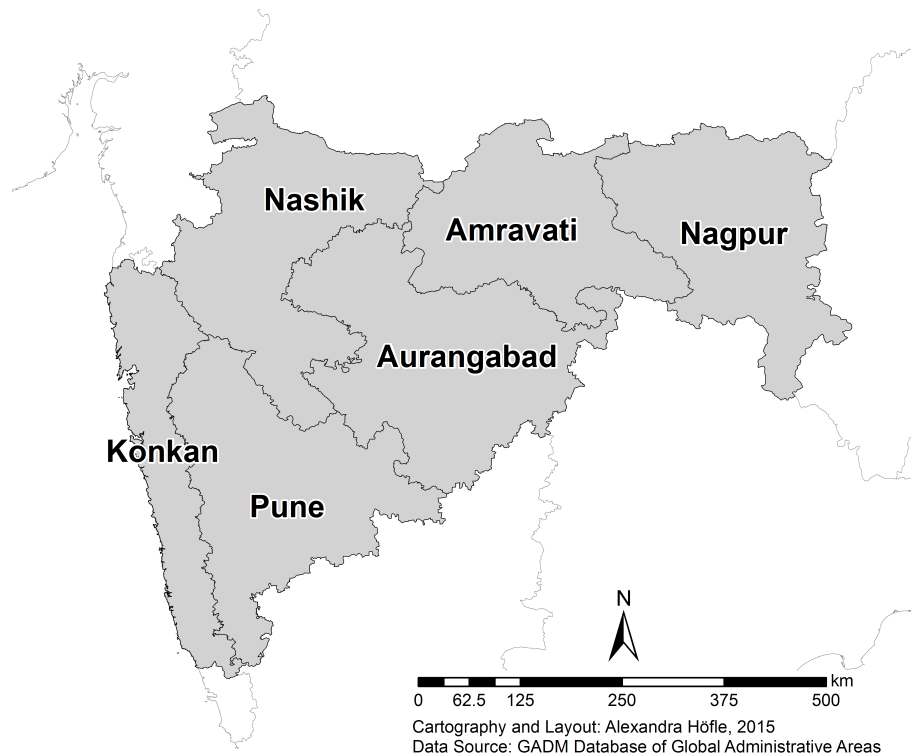
#### 3.1 Study Area: Maharashtra, India



**Figure 3.1:** *Geographical location of Maharashtra in India and its adjacent states. Maharashtra is highlighted in red, all adjacent Indian states in gray.*

Maharashtra is one of India's 29 states and 7 union territories. It is located in the western and central part of the country, bordered by the Arabian Sea to the west and the states of Madhya Pradesh to the north, Gujarat to the northwest, Chhattisgarh to the east, Karnataka to the

south, Telangana<sup>6</sup> to the southeast, and Goa to the southwest (Directorate of Economics and Statistics 2015, 1; Figure 3.1 and Figure 3.2). Maharashtra covers an area of 307,713 km<sup>2</sup> and has a population of more than 11 million (in total 11,372,972) – which corresponds to 9.3% of the total population of India (Directorate of Economics and Statistics 2015; MHDR 2012). Thus, the state is one of the largest states of India (Kalamkar 2006).



**Figure 3.2: Administrative divisions of Maharashtra.**  
Administrative divisions are highlighted in gray.

### 3.1.1 Human Development in Maharashtra

In consideration of human development, Maharashtra ranks among the wealthiest and most developed states in India. Using the Human Development Index (HDI) as a measure, human development captures not only economic growth but also the dimensions of health and education as important parameters (MHDR 2012, xxxiii). In comparison to the all-India level as well as other states in India, Maharashtra's level of per capita income is 40% higher than the all-India average (Kalamkar 2006, 169; MHDR 2012). These high income measures are due to progress in non-agricultural sectors, such as industries. Today, Maharashtra is also the most industrialized state in India (Directorate of Economics and Statistics 2015). Although the primary sector is declining, the majority of workers are still employed in agriculture (MHDR 2012, 5). With respect to education and health, it must be stated that Maharashtra has made substantial improvements. Hence, it reports a higher literacy rate than the all-India average as well as progress in crucial health indicators, such as a higher life expectancy and a decrease in infant and maternal mortality. An important reason for Maharashtra's positive hu-

<sup>6</sup> Until June 2014 Telangana belonged to the state of Andhra Pradesh, which is depicted in the map.

man development is its high urbanization rate. With 45.2% of people residing in urban areas, the state is the most urbanized state in India (MHDR 2012).

In spite of its overall high development, it must also be stated that Maharashtra shows huge inter-district disparities as well as disparities between rural and urban areas (Kalamkar 2006; MHDR 2012; Shaban 2006). For instance, unemployment rates and poverty are lower and literacy rates are higher in the urban areas of Maharashtra, such as Mumbai and Pune (Desai et al. 2010; MHDR 2012). Also with respect to health, Maharashtra shows diverse improvements depending on district, gender and social group (MHDR 2012). These disparities result, according to Shaban (2006), from different emphases placed by economic development policies. Until the 1960s, industrialization, which should induce modernization, was the main focus of development theories. Furthermore, the positive growth of urban and developed centers should eventually also affect rural areas. Only from the 1970s onwards, rural development and agriculture were considered as important too. Nonetheless, the importance of the primary sector is declining, which results in marginalizing those who are dependent on agriculture and who constitute almost two thirds of Maharashtra's population (Shaban 2006).

### **3.1.2 Agriculture in Maharashtra**

Agriculture in India as well as in Maharashtra has been and still is an important economic sector providing employment opportunities and constituting the main source of income for more than half of the population (Desai et al. 2010; Kalamkar 2006). 85% of the total arable land of Maharashtra is already used for agricultural production (Kalamkar 2006, 169). The state's agriculture is mainly rain-fed with only low levels of irrigation. Since Maharashtra is influenced by a monsoon climate, rainfall is typically occurring in the summer, especially in early June. Yet, rainfall varies significantly in general and depending on the region. These factors explain, according to Kalamkar (2006, 187), the low advancement in Maharashtra's agriculture despite its overall high level of development. Moreover, agriculture in Maharashtra differs regionally due to variations in soil-climatic conditions as well as investments in rural infrastructure (Kalamkar 2006, 183). For instance, access to resources such as land, water or fertilizers affect the type of crop grown and the agricultural incomes.

Although the average farm size in India has decreased in the last years resulting in most farmers cultivating less than one hectare, Maharashtra as well as Punjab and Haryana are among the states that have comparatively large farms (Desai et al. 2010). In 2011, Maharashtra's farmers were, nevertheless, predominantly small and marginal farmers "*with landholding less than or equal to two [hectare]*" (Directorate of Economics and Statistics 2015, 81). Concerning agricultural income it is evident that earnings are low and dependent on land and water. Thus, irrigation increases farm income as farmers are able to grow multiple crops in the course of the year. The main crops grown in India are rice and wheat. Yet, there are also several other crops which are cultivated only in specific areas (Desai et al.

2010). According to Desai et al. (2010), the types of crops grown also correlate with the socio-economic status of a farm household. Hence, food grains are cultivated by all, but especially, poor and illiterate farmers. Commercial crops, on the contrary, are more frequently found amongst wealthier and educated farm households. In Maharashtra, predominantly food crops such as the cereals *jowar* (sorghum) and rice, and non-food crops such as soybean and cotton are cultivated (Directorate of Economics and Statistics 2014).

Altogether, farmers in Maharashtra are faced with uncertainty and risk. This can be attributed to the higher costs and the higher need of agricultural inputs (e.g. fertilizers), the instability of income, and the dependency on weather and soil conditions. Because of these factors, farmers are considered as being more vulnerable than other occupational groups. In addition to that, more than half of all farmers in Maharashtra are in debt (Desai et al. 2010; Kalamkar 2006). These aspects culminate in large numbers of farmers' suicides which rank among the highest in India (Nagaraj 2008; Rahman 2012).

On the basis of these characteristics, Maharashtra is considered as a suitable and valuable study area to address the main research questions. Especially, its high industrial and human development, which implies that Maharashtra is one of the most developed and wealthiest states in India, together with an almost complete neglect of its agricultural sector leads to the evaluation that Maharashtra is a representative case study. The huge number of farmers' suicides – which in 2006, especially in the Vidarbha region<sup>7</sup> of Maharashtra with almost 2,200 farmers' suicides, was even assessed as a suicide epidemic (Behere and Behere 2008) – is another crucial factor. Despite concrete measures, such as the introduction of an employment guarantee scheme for rural areas already in 1977 (Deogirikar and Topare 2008) or of a rehabilitation package in 2006 (Kalamkar and Shroff 2011; Narayanamoorthy 2008), SRMs among farmers remain high. In addition to that, another important aspect is that mostly one crop, namely cotton, is grown in the state. This allows for comparison between the studies which will be analyzed in the following.

## 3.2 Theoretical Framework

Even today, a division is prevalent between, on the one hand, sciences which deal with predominantly quantitative data and, on the other hand, those who are particularly concerned with qualitative information. The former, often referred to as natural sciences, accuse the more interpretive disciplines for lacking any means to provide generalizations. Vice versa, the latter aiming at thick and local descriptions criticizes the other, number-centered approach for missing details (Latour 2010, 145). In the context of this discourse, 19<sup>th</sup>-century scholars tried to transform sociology into a quantitative science. In this debate, two different

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<sup>7</sup> Vidarbha region is located in the east of Maharashtra, comprising the two divisions of Amravati and Nagpur. Within this region, the districts of Wardha (belonging to Nagpur), Washim and Yavatmal (both belonging to Amravati) attracted great attention by researchers.

approaches were offered by the philosophers Gabriel Tarde and Émile Durkheim. Although Tarde published his work a few years earlier, Durkheim became more popular as one of the main representatives of sociology (Latour 2002). Tarde's and Durkheim's ideas differ mainly concerning their definition of society, the relation of society as a whole versus the individuals constituting it, and the leading processes making up a society (Latour 2010). Both approaches, and especially their comparison, serve as a valuable theoretical background for this study on farmers' suicides. While Tarde's (1903) approach to sociology will be transferred to the study of suicide, Durkheim (1951) himself considered suicides in his writing. Having established this framework, it is possible to distinguish between two procedures to examine the phenomenon in Maharashtra in the following. In a first step, Tarde's idea of sociology as a science will be outlined, followed by Durkheim's approach. Then, a short conclusion will be drawn summarizing the main arguments and dichotomies.

### **3.2.1 Gabriel Tarde's Approach to Sociology**

In contrast to common perceptions linking qualitative sciences with the study of individuals, Gabriel Tarde offers a different interpretation of quantitative science (Latour 2010). Tarde (1903) considers the study of individual variations as a starting point for quantification and as crucial when talking about society. Quantities are, according to him, repetitions of phenomena which can easily be measured. Against this background, Gabriel Tarde (1903) tries to outline a pure and general sociology which is based on imitation as a central aspect. Tarde (1903) argues that communication and imitation are fundamental social facts which constitute social relations. Originating from the imitation and repetition of an individual invention, a collective phenomenon can be generalized and social resemblance is induced (Tarde 1903; Vargas et al. 2008; Wray, Colen, and Pescosolido 2011, 507).

Social resemblance is another crucial term for Tarde (1903) since it is the basis of society. He states that any association, whose members resemble each other, can be defined as a society. Hence and by pursuing this notion of society, Tarde (1903) extends prevalent economic or juristic conceptions, which regard society as being based, among other aspects, on mutual helpfulness, determined agreements and rights. Furthermore, in distinction to, for instance, Durkheim (1951), Tarde does not restrict societies to human beings but also acknowledges animal societies (Latour 2002; Tarde 1903, 59-88).

Moreover, Tarde (1903) claims that there are two sorts of social relations: (i) one which consists of instructions and transmits a belief, and (ii) the other which consists of commands and conveys a desire (Tarde 1903, xvi). Hence, individuals tend to imitate actions and behaviors in their surroundings since they regard them as meaningful or authoritative. These dogmatic and powerful characteristics of social relations are exactly the reason that binds men together. Imitation, then, appears in two different ways: either by directly acting like another



person or by counter-imitation, i.e. doing exactly the opposite (Karsenti 2010; Tarde 1903; Wray, Colen, and Pescosolido 2011, 507).

Tarde (1903) regards belief and desire as quantities and, thus, as measurable. For him, sociology should be, besides being experimental and observational, also a statistical science. He advocates the use of statistics as a means of expressing changes in society (Barry 2010; Didier 2010). Tarde (1903, 89-139) states that the essential nature of statistics is that they enumerate acts which are as much alike as possible. By means of curves, the spread of imitation can be depicted. He claims that sociological statistics should aim at identifying the imitative power of inventions as well as its effects.

### **3.2.2 Émile Durkheim's Approach to Sociology**

Émile Durkheim is regarded as a pioneer of modern social research since he established sociology as a science and a new academic discipline using his own methodology (Latour 2010). According to him, sociology incorporates the study of phenomena which are attributed to society at large, instead of being limited to individuals. Furthermore, he demands that problems addressed by sociology should be describable by clear facts and definitions, since they are themselves often not clear-cut (Durkheim 1951, xxxiii). Durkheim's approach is based on the presumption that society is more than the sum of its parts (Vargas et al. 2008). He argues that each society is made up of a collective conscience – the aggregate of beliefs, practices and mores, which bind individuals together (Vargas et al. 2008). Furthermore, he points out that social facts must be studied according to their relation to other social facts. On the basis of his study on suicide (Durkheim 1951), key aspects of Durkheim's approach will be elaborated.

Durkheim defines suicides as “[...] *all cases of death resulting directly or indirectly from a positive or negative act of the victim himself, which he knows will produce this result*” (Durkheim 1951, xlii). Although suicide is commonly perceived as a phenomenon referring to an individual person, Durkheim (1951) emphasizes that it must be analyzed according to the social structure. He points out that the social suicide rate can be explained only sociologically (Durkheim 1951, 263). Durkheim (1951, 97-104), thus, proposes an etiological categorization of suicides aiming at the identification of their causes and their classification into social types. Based on social characteristics such as family status or religious confession, which are subsumed as social environments, Durkheim (1951) attempts to study general causes of suicide from which he returns to individualized forms of suicide. Durkheim (1951, 264) argues that each society has its own collective inclination for suicide, which is affected by the variables of egoism, altruism and anomy which are prevalent in society. He documents this collective aptitude by pointing out that the annual number of suicides remains approximately the same for each society despite the fact that the individuals which constitute it are changing (Durkheim 1951, 271). Based on this, Durkheim (1951, 285) deduces that as long as the social condi-

tions remain the same, the number of suicides continues to be stable as well. Hence, the suicide rate can be even seen as a characteristic index of a society. According to Durkheim (1951), the individual disposition to suicide always depends on the collective inclination as it is a reflection of the social structures. One example of this aspect is the seasonal variation in the number of suicides similar to social activities, namely increasing from January to July and decreasing thereafter.

Analyzing the social environments, Durkheim (1951) argues that suicide can be categorized into three broad groups: (i) egoistic suicide, (ii) altruistic suicide, and (iii) anomic suicide. These types result from the degree of integration and regulation of social groups by society. For instance, egoistic suicide is the result of a lack of integration, whereas anomic suicide results from a lack of regulation by society. Altruistic suicide is induced by a too rigorous regulation of individuals.

Another important aspect, which is useful for the comparison between the two different approaches, is the aspect of imitation. Gabriel Tarde (1903) was one of the social scientists who emphasized the importance of imitation (cf. Chapter 3.2.1). Hence, Émile Durkheim in his study on suicide also dealt with this aspect as one extra-social factor of suicide. First of all, Durkheim (1951, 75-76) defines the different meanings which, according to him, persist concerning the notion of imitation. He summarizes three different perceptions of the term 'imitation': (i) sharing common, reciprocal feelings, (ii) following social customs and manners in order to act morally, and (iii) the automatic reproduction of acts performed by others in our presence. Durkheim (1951) perceives the second notion of imitation as incorrect since imitation in his view does not involve fear or respect as a trigger. He argues that if imitation is seen as such a crucial source of social phenomena, its influence should be particularly apparent in the case of suicide. Further, Durkheim (1951) states that this influence must be visible in the geographic distribution of suicides, i.e. emanating from larger cities. Yet, his study on suicides in the period of 1887 to 1891 revealed no such distribution but the occurrence of almost homogenous masses. Hence, Durkheim (1951) concludes that imitation has no effect on suicide, rather the social environment affects the social suicide rate. He acknowledges that in individual cases, imitation might have an effect, but not concerning the whole society. Based on this finding, Durkheim also deduces that a sociological approach that is exclusively grounded on imitation, such as for instance offered by Tarde (1903), must be weak (Durkheim 1951, 74-94; Karsenti 2010).

### **3.2.3 Summary of Tarde's and Durkheim's Main Arguments**

The distinction between the two approaches offered by Gabriel Tarde and Émile Durkheim already rests in what is conceived as a society. For Tarde (1903), everything is a society, whereas Durkheim (1951) only deals with human societies (Latour 2010, 147). While Tarde (1903) places emphasis on individuals and argues that each society depends on and is being

constituted by an imitative behavior of individuals, Durkheim (1951) regards society to be more than the sum of its individual parts. Furthermore, Durkheim (1951) points out that collective behavior is influenced by social facts external to the individual. According to him, individual variations must be considered as mere manifestations of these social facts. Tarde (1903), on the contrary, argues that a social fact can only result from individual inventions which are imitated. When these individual imitations are generalized, a collective phenomenon is established. Yet, he emphasizes that neglecting individuals in the analysis of society would leave no subject to study since they are essential (Vargas et al. 2008).

### **3.3 Analysis of Quantitative and Qualitative Research**

The scientific method of this thesis is based on a literature review. Furthermore, the analysis of farmers' suicides in India focuses on the study area of Maharashtra described above. Based on this and the aforementioned theoretical framework, the approach applied in this thesis will now be explained in more detail. In the following, first the literature search and selection of studies suitable for analysis will be explained, followed by the description of the actual analysis of the chosen publications.

#### **3.3.1 Systematic Literature Research and Selection of Studies**

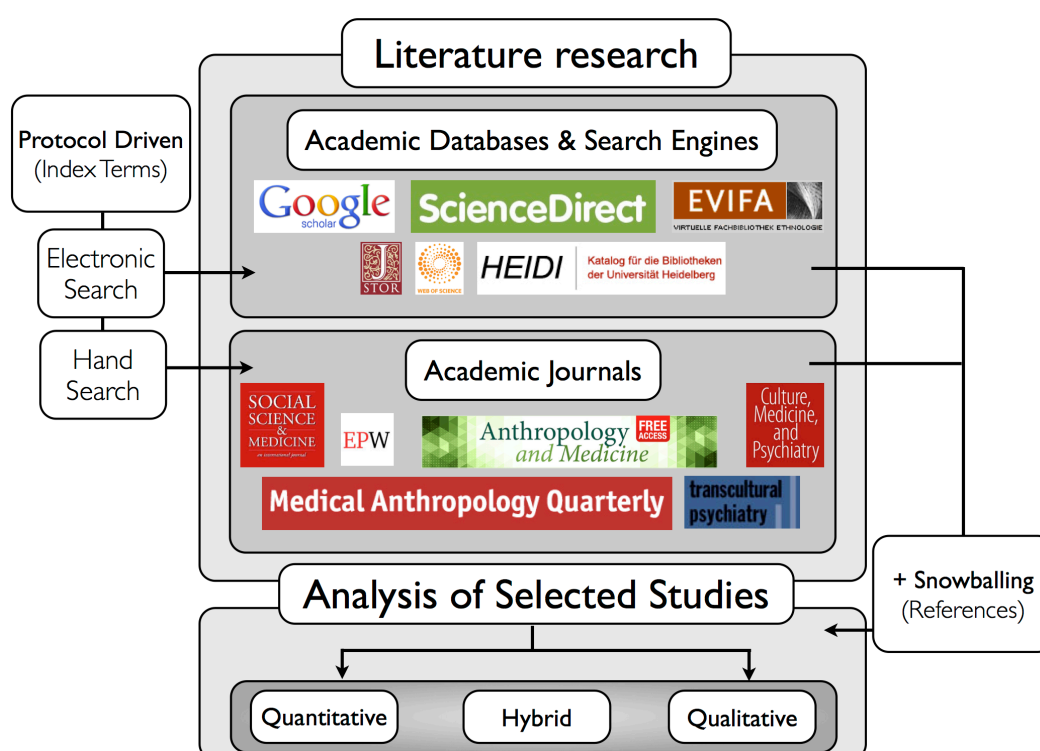
The systematic literature research aims at identifying publications on farmers' suicides in the state of Maharashtra, India. Literature is searched systematically using the following digital academic databases and search engines: *JSTOR*, *Google Scholar*, *ScienceDirect* and *Web of Science*. Furthermore, *EVIFA*, the Virtual Library of Social Anthropology, and *HEIDI*, the catalogue for libraries of Heidelberg University, are searched. Besides this electronic search also hand search of journals such as *Anthropology and Medicine*, *Culture, Medicine and Psychiatry*, *Economic and Political Weekly*, *Medical Anthropology Quarterly*, *Social Science and Medicine*, and *Transcultural Psychiatry*, was conducted. The literature search is limited to English-language articles, but no restrictions with regard to the publication period were applied.

Both search strategies belong, according to Greenhalgh and Peacock (2005), to the 'protocol driven' method. The protocol driven approach relies on a predefined procedure and the use of index terms. In this thesis, the keywords are derived from three main parameters (i) death was suicidal, (ii) the suicidal person was employed in farming, and (iii) the suicide happened in the Maharashtra state of India. Hence, for these parameters, the search terms (i) "*suicide*" OR "*suicid\**", (ii) "*agriculture*" OR "*agricultur\**" OR "*farming*" OR "*farm\**", and (iii) "*Maharashtra*" OR "*Vidarbha*" are applied. In order to achieve more results, similar keywords are joined with the logical OR operator, while all parameters are combined using the logical AND operator. The terms are first searched in abstract and title, and then, in order to extend the number of results also in all fields (Table 3.1).

**Table 3.1:** Keywords for literature research classified by three main parameters.

Parameter 1: Cause of death	Parameter 2: Occupation	Parameter 3: Spatial focus
"suicide" OR "suicid*"	"agriculture" OR "agricultur*" OR "farming" OR "farm*"	"Maharashtra" OR "Vidarbha"

Moreover, in order to render the literature research more comprehensive, it is not restricted to any date of publication. This protocol driven search strategy, if used alone, is assessed as offering only a limited number of suitable results (Greenhalgh and Peacock 2005). Thus, in this thesis 'snowballing' is applied as a second method. Consequently, references of already selected studies are considered as well (Figure 3.3).



**Figure 3.3:** Workflow diagram for literature research.

The selection of studies suitable for analysis is first based on an assessment of the title and abstract of the publication and secondly on scanning the full text. A study is considered suitable for further analysis if it is focused on farmers' suicides and a large part of it deals with the state of Maharashtra or if the study deals with the agrarian situation of Maharashtra and it concentrates on farmers' suicides. In addition to that, also publications that examine farmers' suicides or agrarian distress in India as a whole are chosen for closer reading.

### 3.3.2 Analysis of Selected Studies

As already explained in the theoretical background, two different approaches are prevalent with respect to the analysis of social phenomena. The first approach is more focused on the society as a whole, while the second places more emphasis on the individuals constituting society. In this thesis, such a distinction is also drawn between what is termed quantitative and qualitative studies. This distinction is chosen deliberately although other similar discriminations are prevalent too, such as between the medical and the social sciences (e.g. Balayannis and Cook 2015; Carey 1993) or between the case study and the statistical approach (e.g. Douglas 1966; Macdonald 2007). The reason for distinguishing between quantitative and qualitative studies is, on the one hand, a facilitated classification since the focus is put on the respective methodology instead of the discipline. On the other hand, such a distinction resembles to a greater extent the already existing categorization which has been established in the theoretical framework. Hence, quantitative approaches are based on Durkheim's (1951) notion of sociology, while qualitative approaches can be related to Tarde's (1903) theory. In the following, the characteristics of both approaches are illustrated in more detail. In addition to Durkheim's (1951) and Tarde's (1903) theory, the differentiation applied here is also predicated on the general definition of quantitative and qualitative research methods.

In this context, quantitative research comprises all studies which aim at providing universal laws using standardized procedures. As quantitative methods are based on the assumption that there is only one objective reality, their main goal is to investigate causal relationships between variables of a phenomenon (Sale, Lohfeld, and Brazil 2002). Thus, these methods try to explain social phenomena by means of applying and assessing existing theory. Moreover, quantitative research attempts to be objective and representative. As a consequence, large sample sizes are used in order to answer a clear research question within a narrow study setting. Data is typically obtained by measuring or counting specific variables. Furthermore, a highly structured study design is elaborated and applied (Carey 1993). Additionally, common methods are, according to Sale, Lohfeld, and Brazil (2002), randomization, blinding as well as questionnaires containing predefined responses. With respect to farmers' suicides, an ideal quantitative study would focus on the whole state of Maharashtra as a study site trying to identify certain patterns linked to these suicidal deaths. Furthermore, this study would use official statistics provided by the NCRB or elaborate structured, large-scale (over time and space) questionnaires with predetermined categories aiming at obtaining representative data.

Qualitative research, on the other hand, is based on the presumption that reality is socially constructed (Sale, Lohfeld, and Brazil 2002). Hence, this type of research incorporates all studies which consider individual characteristics of social phenomena and try to understand these from the perspective of the acting subjects. While quantitative research is rather deductive, qualitative research is inductive. As a result, it emphasizes social processes and

meanings and uses samples which are not designed to be (statistically) representative. In order to establish a theory, in-depth and focus group interviews as well as participant observation are used as common methods (Carey 1993; Sale, Lohfeld, and Brazil 2002). Thus, an ideal qualitative study on farmers' suicides would concentrate on a rather small study area, for instance one village. This study would aim at understanding the phenomenon or specific aspects of it by responding to the information obtained from local informants without having a predefined structure in mind.

In addition to quantitative and qualitative research mixed methods research is considered as a valuable research methodology too. Mixed methods research is defined as “[...] *the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches [...] for the broad purposes of breadth and depth of understanding and corroboration*” (Johnson, Onwuegbuzie, and Turner 2007, 123). Hence, this type of research attempts to combine the advantages of quantitative and qualitative research. Such a combination or so-called triangulation of quantitative and qualitative elements takes place in one study with different mixing possibilities. The options are, amongst others, (i) simultaneous methodological triangulation, and (ii) sequential methodological triangulation. The first possibility integrates quantitative as well as qualitative methods in one study at the same time, whereas the latter utilizes the first approach and its findings in order to plan the next method (Carey 1993; Johnson, Onwuegbuzie, and Turner 2007; Kral, Links, and Bergmans 2012). Furthermore, using a sequential methodological triangulation leads to the benefit that the reliability of the whole study is ensured since both approaches perfectly supplement and control each other (Carey 1993). In addition to that, it must be pointed out that a mixed methods approach can also have a focus on one dominant method. For instance, in sequential methodological triangulation with an explanatory design, qualitative elements are used to supplement an otherwise quantitative study (e.g. by answering questions posed by quantitative data), whereas an exploratory design develops quantitative measures within an otherwise qualitative study (Johnson, Onwuegbuzie, and Turner 2007; Kral, Links, and Bergmans 2012).

The publications selected within the literature review are analyzed according to this differentiation. In order to make clear statements regarding the specific methodology and its findings, particular emphasis is placed on the dualism between quantitative and qualitative research. This thesis' analysis is conducted on two different levels. The first layer concentrates on the design and the methods of the study, whereas the second deals with the findings with regard to farmers' suicides. Concerning the first level, the studies are, at first, classified as either quantitative or qualitative studies using the aforementioned characteristics of both. For instance, a study which analyzes farmers' suicides using a large sample size and statistical methods is assigned to the quantitative section, whereas research focusing on few households and a comprehensive understanding of farmers' suicides using interviews is allocated

in the qualitative section. In short, if statistical representativeness and comparability are central, a study is determined as quantitative, while the focus on individual characteristics suggests that the study is qualitative. If a study consists of a combination of quantitative and qualitative methods, i.e. if its research methodology links both approaches, the study is considered as a mixed methods study. In cases of doubt or if both, quantitative and qualitative, methods are used independently of one another, the main focus of the study is analyzed. This is also supplemented by taking the journal, in which the study has been published, as well as the academic background of the authors into consideration. The remaining studies, which cannot be assigned to either quantitative, qualitative or mixed methods research and which use both quantitative and qualitative methods without combining them, are defined as hybrid studies.<sup>8</sup>

After the selected publications have been distinguished between quantitative and qualitative studies, relevant information on the phenomenon of farmers' suicides is extracted. This thematic content analysis and extraction is based on the predefined study objectives. Thus, on the first level, information on the study objectives, datasets, methods, findings and conclusions is obtained. On the second level, data on magnitude and trends in farmers' suicides in Maharashtra and regional patterns in incidence is excerpted. This information facilitates the comparability between quantitative and qualitative studies as well as the further assessment whether and how both types of research could be combined in the context of farmers' suicides.

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<sup>8</sup> The category of hybrid studies is determined in this thesis as a fourth type of research methodology including all studies that are considered as exceptional cases, i.e. studies which use both quantitative and qualitative research methods independently of one another. The term 'hybrid study' is not officially used when speaking about research methodologies and must be separated from mixed methods research, which refers to a combination of quantitative and qualitative research.

## 4. RESULTS

This chapter summarizes the findings according to the main research questions of this thesis. Following these questions, the chapter is subdivided into three broader sections: the first two focus on existing studies of farmers' suicides in Maharashtra dealing with (i) the specific methodology, and (ii) the particular findings with respect to these suicides. Each of these sections is divided into quantitative and qualitative research. The last section tries to answer the question of (iii) whether and how quantitative and qualitative methods could be combined in the analysis of farmers' suicides. The results are first portrayed descriptively and then analyzed in the specific context of this thesis. Before engaging with these specific results, general characteristics of the selected studies are provided. An overview of all studies structured according to the type of study, study area, major focus as well as central findings of the study is provided in the Appendix.<sup>9</sup>

In total, 34 studies were found which deal with farmers' suicides and agrarian distress in the state of Maharashtra. Out of these, after more detailed examination, four studies were excluded due to their only minor consideration of farmers' suicides and one study (Madare 2012) due to its partial plagiarism of an already existing publication (Behere and Behere 2008) (Figure 4.1). Altogether, the selected studies were published between 2004 and 2015, the majority in 2006 (13 studies). This publication period is certainly influenced by the fact that suicide rates increased since 2003 (Max and Kakde 2006; Mitra and Shroff 2007). Kalamkar and Shroff (2011) even argue that the suicide epidemic spread from the state of Andhra Pradesh, having its peak in 2004 to 2005, to Maharashtra where a maximum of farmers' suicides was reached in 2006.

A large part of the studies were published by scholars working in the field of development research (10), followed by politics and economics (7), agriculture, specifically extension education (6), social science (3) as well as medicine including public health and psychiatry (2). This distribution is also influenced by the fact that some authors, who are engaged in this field of research, published several articles on the subject of farmers' suicides in Maharashtra. The prevalence of studies originating from the field of development research can be attributed to one larger study (Mishra 2006c) which additionally offered 6 background papers.

With respect to the type of publication, it must be mentioned that the majority of studies were journal articles published, amongst others, in *Economic and Political Weekly* (6), the *Indian Journal of Psychiatry* (2) and the *Karnataka Journal of Agricultural Sciences* (2). In total, all 14 journal articles are published in peer-reviewed journals, though with different review processes and criteria. The remaining studies were released by research institutes such as the

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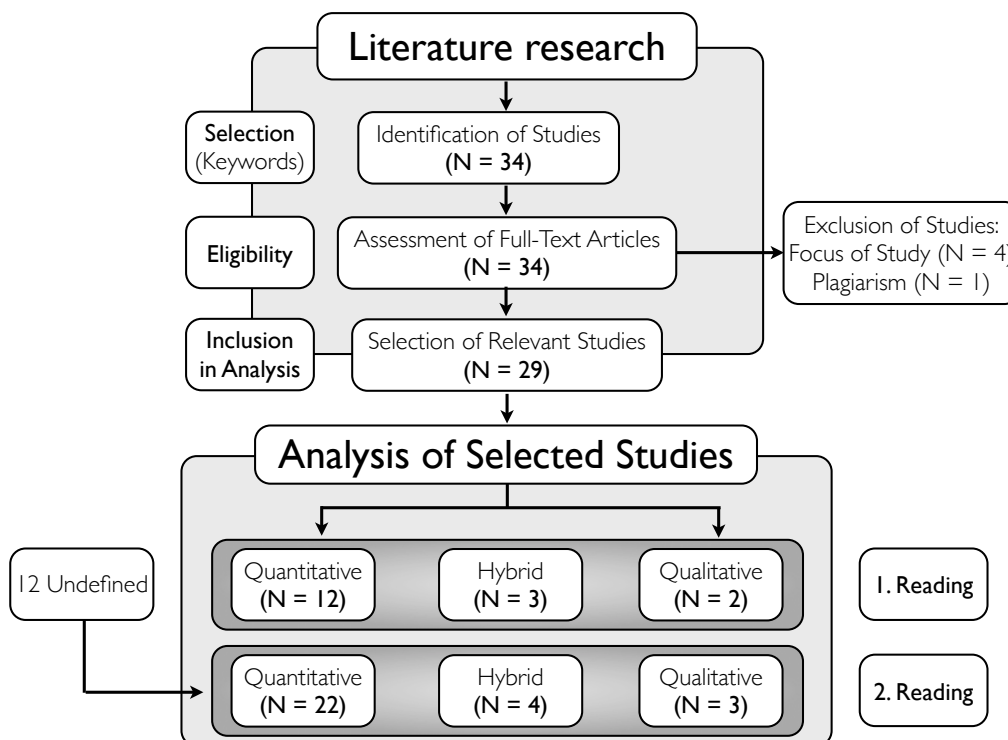
<sup>9</sup> All findings summarized here are derived from the information given in the selected studies. Based on previously mentioned criteria, the studies were analyzed and characteristic features counted.



*Indira Gandhi Institute of Development Research (IGIDR)* in Mumbai (7), the *Gokhale Institute of Politics and Economics (GIPE)* in Pune (1) and the *Tata Institute of Social Sciences (TISS)* in Mumbai (1). Only four books were found dealing with the specific topic of farmers' suicides in Maharashtra. Thereof, one book was entirely dedicated to the subject, while the others only provided chapters. Moreover, almost half of the studies (12) were commissioned or funded by the government of Maharashtra.

## 4.1 Evaluation of Quantitative and Qualitative Research

The differentiation between studies based on quantitative and qualitative research was conducted in two steps (Figure 4.1). Out of the 29 selected publications and after initial reading, 12 studies were identified as quantitative, two as qualitative and three as hybrid studies. None of the publications could be considered as being based on mixed methods research. The remaining 12 studies could not be assigned to any of these categories yet. After more careful analysis of the methodology and study design as well as the type of publisher, 10 studies were evaluated to be quantitative, one to be hybrid and one to be qualitative. Hence, according to the assessment criteria of this thesis, existing research on farmers' suicides in Maharashtra is examined by 22 quantitative, three qualitative and four hybrid studies. In the following, these studies will be evaluated in more detail with respect to their study design.



**Figure 4.1:** Study flow for selection and differentiation of selected studies.  
(Only English-language articles are considered.)

As argued earlier, quantitative research on farmers' suicides in Maharashtra make up the largest part of the selected studies. Thus, it is possible to obtain more thorough information on how suicides are analyzed in the study area of Maharashtra using this approach. The selected quantitative studies mainly used interviews, mostly based on questionnaires (10), literature or media reports (6) and existing case records (4) as means of collecting data. In one case (Behere and Behere 2008) psychological autopsy was applied as a specific form of interview. The study period ranged from one year (5) and two years (3) to ten years (2). Additionally, referring to the scale of the study, the whole state of Maharashtra was covered most frequently (9). The other studies focused on one region (Vidarbha) (6), maximum three districts (4) and not more than one district (3). Six of these studies further applied statistical calculation for analyzing their data. In another six studies no specific method was mentioned. These studies analyzed between 60 cases as a minimum and 435 cases as a maximum value. Altogether, the studies focused in most cases on the reasons for farmers' suicides (7), the influence of (Bt) cotton (3) as well as the impact of the rehabilitation package offered by the government of Maharashtra (3).

Concerning qualitative research of farmers' suicides it must be pointed out that only few studies have been conducted in the state of Maharashtra. Nevertheless, the three selected studies as well as the four studies later considered as hybrid will give insight into how the various approaches differ and why the distinction according to research methodology is valuable. The three qualitative studies used free listing and pile sorting, focus group discussions as well as interviews as major techniques to obtain data. Their study period reached two years as a maximum, and the total number of cases examined was not more than 17. Moreover, the majority of the studies focused on the Vidarbha region (Dongre and Deshmukh 2012; Kakde 2006), while the other study concentrated on the Parbhani and Beed district of Marathwada<sup>10</sup> (Gavhane, Ekale, and Sidam 2012). The main foci of these qualitative studies were the causes of suicide (2) and the relevance of cotton (1).

The category of hybrid studies was, as argued earlier, introduced due to the fact that some studies used both approaches for their investigation. Hence, four studies were detected using this mixed methods approach consisting of statistical computation and larger sample sizes as well as qualitative techniques to obtain data. In respect of the methods used, the elaboration of case studies (3) by means of focus group discussions, interviews and questionnaires was the most frequent. The study period covered one year as a maximum and the number of cases reviewed ranged from 36 to 66. Regarding the scale of these studies, it must be mentioned that Meeta and Rajivlochan (2006) as well as Mohanty (2004, 2005) conducted their analysis on district level focusing on Yavatmal or Amravati and Yavatmal, respectively. The study by Dandekar et al. (2006), however, was much larger in scale covering

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<sup>10</sup> Marathwada region is located in the center of Maharashtra, including the divisions of Aurangabad and Nanded.

the two regions of Marathwada and Vidarbha as well as the district Kandesh (Nashik division). In addition to that, in half of the hybrid cases the focus of the study was directed towards the reasons for farmers' suicides.

Summing up, the evaluation of quantitative and qualitative research on farmers' suicides in Maharashtra revealed a significant predominance of quantitative studies. This finding may result from the fact that almost half of the selected studies have been conducted on behalf of the government. As a consequence, they might to a greater extent be geared to a comparability using numbers. This usage of numbers or statistics and its impact will be discussed in more detail in the next chapter (cf. Chapter 5). As already defined as distinguishing criteria, quantitative studies are much larger concerning their study design. Thus, for the majority the study area was the entire state of Maharashtra where up to several hundred cases were analyzed. Qualitative and hybrid studies, on the contrary, concentrated on one region at the maximum or analyzed farmers' suicides on district level using not more than one hundred cases. This result concerning the scale of the studies is not surprising as the studies have been classified, amongst others, according to the dimension of their study design.

Yet, another aspect of interest is that none of the studies, and unexpectedly none of the quantitative studies in particular, refers to the ADSI report by the NCRB. Rather, most of the selected studies conducted their own fieldwork in order to obtain data or relied solely on pre-existing data derived from, for instance, a medical college or literature. Moreover, relating to the methods used, it must be pointed out that all approaches equally conducted interviews with relatives or acquaintances of the deceased. The distinction that must be drawn here is that quantitative studies had larger sample sizes and applied statistical analysis in order to evaluate their data, whereas qualitative and hybrid studies mostly portrayed the information gained as individual case examples. Again, this was also anticipated because of the predetermined distinguishing criteria of the approaches. In addition to these results, all approaches mainly focused on the reasons for farmers' suicides. In the following subchapter, the specific findings of all approaches will be discussed and then linked with the approaches in order to offer not only a descriptive perspective of the studies on farmers' suicides but also to answer the main research question of this thesis.

## **4.2 Situation Assessment: Farmers' Suicides in Maharashtra**

After a descriptive illustration of the methods used by the different approaches, this subsection focuses on the subject of farmers' suicides. At first, the situation of farmers in Maharashtra will be portrayed irrespective of approach. More precisely, findings in respect of the reasons for farmers' suicides as well as the characteristics of the farmers will be depicted. The second part of this subsection investigates to which extent the three approaches differ and what conclusion can be drawn linking approach and findings.

### **4.2.1 General Findings in Respect of Farmers' Suicides**

General findings concerning farmers' suicide are mostly related to (i) the reasons for farmers' suicides, (ii) the characteristics of deceased farmers and (iii) the suggestions made for improving the situation. As mentioned before, the causes of farmers' suicides are the predominant objective of studies in Maharashtra. The reasons mentioned in the selected studies can be summarized according to structural, social and other reasons for farmers' suicide.

#### *Reasons for Farmers' Suicides*

Regarding structural reasons, the change of the Indian economy and agriculture due to globalization and liberalization must be first pointed out. One implication of this change is the declining importance of the agricultural sector in the Indian economy, and associated therewith, the uncertainty concerning agriculture in the future (Behere and Behere 2008; Deogirikar and Topare 2008; Guha 2012; Shah 2006). This could be attributed to a loss of competitiveness (Mitra and Shroff 2007) resulting from an increase in trade and imports (Guha 2012). Cotton, for instance, is increasingly imported from Sudan, Egypt or Israel because of its higher quality and lower prices (Deshmukh 2010).

Another crucial development is the current focus on cash crops, especially cotton, and monoculture of crops (Dandekar et al. 2006; Guha 2012; Max and Kakde 2006; Mishra 2006c). As a consequence thereof, according to Dandekar et al. (2006), a rising quantity of fertilizers used in agriculture is prevalent since the 1980s. In addition to that, organic seeds are nowadays replaced by cheaper GM seeds (Guha 2012; Max and Kakde 2006; Mohanty and Shroff 2004). Yet, while the seeds are cheaper, the input costs of these GM or HYV crops are higher, and thus, cost-intensive farming is encouraged (Dandekar et al. 2006; Dongre and Deshmukh 2012; Kakde 2006; Kulkarni and Deshpande 2006; Mishra 2006c; Mohanty and Shroff 2004).

Another often cited reason is that agriculture is increasingly becoming unremunerative. This lack of economic efficiency is attributed, on the one hand, to the rising costs of cultivation (Behere and Behere 2008; Dandekar et al. 2006; Dongre and Deshmukh 2012; Max and Kakde 2006; Mishra 2006d; Mitra and Shroff 2007; Mohanty and Shroff 2004; Shroff 2006), the simultaneous decline in prices of farm products and the high fluctuation of market prices (Behere and Behere 2008; Dongre and Deshmukh 2012; Kale, Mankar, and Wankhade 2014, 2015; Kulkarni and Deshpande 2006; Max and Kakde 2006; Mishra 2006a,c,d). In addition to that, the farmers' dependence on erratic rainfall due to a relative absence of irrigation facilities aggravate the non-profitability of agriculture (Behere and Behere 2008; Dandekar et al. 2006; Deshpande 2006; Kale, Khonde, and Mankar 2014; Kale, Mankar, and Wankhade 2014, 2015; Kulkarni and Deshpande 2006; Mishra 2006a,c; Mohanty and Shroff 2004).

Moreover, the concentration on the monocultural cultivation of cash crops as well as weather uncertainties lead to a declining productivity (Dandekar et al. 2006; Deogirikar and Topare 2008; Deshpande 2006; Gavhane, Ekale, and Sidam 2012; Kale, Khonde, and Mankar 2014) and (repeated) crop failure in the worst case (Behere and Behere 2008; Dandekar et al. 2006; Deshmukh 2010; Gavhane, Ekale, and Sidam 2012; Guha 2012; Meeta and Rajivlochan 2006; Mishra 2006a,c; Mohanty 2005; Mohanty and Shroff 2004). Yet, the plants are also threatened by pest attacks like the American bollworm (Deshmukh 2010), or wild animals (Kakde 2006; Kale, Mankar, and Wankhade 2014).

As a consequence of all these trends, many studies cite indebtedness as an overarching reason why farmers commit suicide (Dandekar et al. 2006; Deogirikar and Topare 2008; Deshmukh 2010; Dongre and Deshmukh 2012; Gavhane, Ekale, and Sidam 2012; Guha 2012; Kakde 2006; Kale, Khonde, and Mankar 2014; Meeta and Rajivlochan 2006; Mishra 2006a,d; Mohanty 2005; Mohanty and Shroff 2004). This debt burden of farmers in Maharashtra is further reinforced by deficient governmental policies. Shroff (2006), for instance, argues that the *Maharashtra State Cooperative Cotton Growers Marketing Federation Ltd* (MSCCGMFL) was unable to balance the high fluctuations in market prices for cotton resulting in uncertain income for farmers. In addition to that, a scarcity of technological and infrastructural investment (Dandekar et al. 2006; Shroff 2006) leads to an inefficient credit delivery system in rural areas, the absence of farm credit and subsidies as well as a lack of insurance schemes (Deshmukh 2010; Deshpande 2006; Max and Kakde 2006; Shah 2006).

Since the majority of farmers do not receive any advice or counseling due to a deficit concerning the dissemination of information (Dandekar et al. 2006; Kakde 2006; Mohanty 2005), they depend on private moneylenders and input dealers (Deshmukh 2010). However, these people often charge a much higher interest than the official rate (Behere and Behere 2008; Deshmukh 2010; Dongre and Deshmukh 2012; Meeta and Rajivlochan 2006; Mishra 2006a). As a consequence, Behere and Behere (2008) point out that with 95% the majority of farmers in Vidarbha is indebted.

Regarding the relief package launched by the government of Maharashtra, Guha (2012) states that only a small proportion of families of the deceased farmers receive assistance. This governmental relief or rehabilitation package includes a seed replacement program, extension support services, additional income opportunities, irrigation facilities, watershed management and debt relief by means of waiving interest, rescheduled loans and coverage of credit through institutional sources (Kalamkar and Shroff 2011). Besides the fact that only few families were eligible to benefit from this package, Narayanamoorthy (2006) emphasizes that the measures included do not address actual causes of distress. Instead of providing immediate help for the families of the deceased, the government decided to focus on more dispensable measures. Not only with respect to the relief package but also in general it is argued that Maharashtra's government has been neglecting farmers' suicides in Vidarbha

and is still disregarding agrarian distress in rural areas (Deshmukh 2010; Max and Kakde 2006; Tiwale 2010). Hence, governmental succor in cases of suicide is perceived as largely absent (Behere and Behere 2008; Dongre and Deshmukh 2012; Kakde 2006). Another factor why farmers have difficulties in improving their situation is the absence of non-farm employment (Dandekar et al. 2006; Deogirikar and Topare 2008; Meeta and Rajivlochan 2006).

In most of the selected studies, economic and environmental parameters resulting in farmers' suicides are mentioned in the first place. Nevertheless, there are also several studies which outline social or personal reasons. Most commonly cited is the inability to fulfill family responsibilities such as the marriage of a daughter or sister (Deshmukh 2010; Dongre and Deshmukh 2012; Gavhane, Ekale, and Sidam 2012; Guha 2012; Kakde 2006; Kale, Khonde, and Mankar 2014; Meeta and Rajivlochan 2006; Mishra 2006a; Mohanty and Shroff 2004). Furthermore, also disputes with others (Kale, Khonde, and Mankar 2014; Mishra 2006a) and social humiliation (Meeta and Rajivlochan 2006) due to, for instance, a fall in economic position or loss of land (Kakde 2006) are important social stressors. In addition to that, (alcohol) addiction (Dongre and Deshmukh 2012; Kale, Khonde, and Mankar 2014; Meeta and Rajivlochan 2006; Mishra 2006a) as well as health problems (Kale, Khonde, and Mankar 2014; Mishra 2006a) are found to have an effect on farmers' suicides. According to Meeta and Rajivlochan (2006) in particular, chronic illness and the absence of mental health professionals must be considered as influencing factors, too.

Other causes of farmers' suicides, which are less often mentioned in the selected studies, include lack of political engagement by the farmers themselves (Deshpande 2006) as well as living in rural areas and having easy access to poisons (Behere and Behere 2008).

### *Characteristics of Deceased Farmers*

Besides the reasons for farmers' suicides, general characteristics of farmers who committed suicide are thoroughly investigated as well. Max and Kakde (2006), Meeta and Rajivlochan (2006) and Mishra (2006a) agree that Maharashtra's suicide rate of farmers has been increasing since the 1990s due to the beginning of liberalization. Furthermore, Mishra (2006c,d) points out that the SMR is highest in the Amravati division, with the majority of suicide deaths occurring during the monsoon months from July to September (Bhatkule 2006; Mishra 2006c,d).

With reference to personal characteristics of deceased farmers, the selected studies argue that most of the farmers were male (Kale, Khonde, and Mankar 2014; Mishra 2006a,c), belonged to the young or middle age groups (i.e. ranging between 30 to 50 years) (Deshmukh, Gohad, and Werulkar 2010; Kale, Khonde, and Mankar 2014; Kale, Mankar, and Wankhade 2014; Mishra 2006a,c; Meeta and Rajivlochan 2006) and had a medium to high level of education (Deshmukh, Gohad, and Werulkar 2010; Kale, Mankar, and Wankhade 2014). Additionally, Mishra (2006a) found that with 80% the majority of farmers was married. Kale,

Mankar, and Wankhade (2014, 2015), furthermore, detected that the deceased farmers predominantly belonged to medium-size families consisting of four to six members. More than half of the farmers in the study conducted by Deshmukh, Gohad, and Werulkar (2010) were drug addicts, while only 10% suffered from mental illness.

The analysis of characteristics related to farming revealed that the majority of farmers in the selected studies had small or medium landholding (i.e. less than or equal to two hectare) (Deshmukh, Gohad, and Werulkar 2010; Kale, Mankar, and Wankhade 2015; Mishra 2006a; Mohanty 2004, 2005). In spite of this, Meeta and Rajivlochan (2006) point out that with respect to the district of Yavatmal no correlation can be found between landholding size or caste and suicide. There is also agreement on the finding that the majority of farmers had only low or no source of irrigation (Deshmukh, Gohad, and Werulkar 2010; Kale, Mankar, and Wankhade 2014, 2015). With regard to the cropping pattern, cotton (Mohanty 2004, 2005; Mohanty and Shroff 2004), soybean and pulses (Kale, Mankar, and Wankhade 2014) have been detected as the most frequently cultivated crops. Moreover, Kale, Mankar, and Wankhade (2014, 2015) found that most of the farmers relied exclusively on crop farming, which implies that livestock, fisheries or dairy farming are not considered as profitable alternatives.

Regarding the aspect of experience in farming, the studies revealed diverse results. Mishra (2006a,c), for instance, predominantly studied farmers with more than ten years of experience, whereas Mohanty (2005) reported the contrary. Hence, no conclusion can be drawn concerning the farmers' agricultural history and background. Yet, Kale, Khonde, and Mankar (2014) emphasize that especially young and inexperienced farmers are prone to commit suicide due to their finding that the suicide rate is declining with increasing experience in farming.

As stated in the section above on causes and, thus, risk factors of farmers' suicide, indebtedness is an important parameter. As a result, several of the selected studies also found indebted farmers in their analysis. Max and Kakde (2006) even argue that 90% of suicides are related to indebtedness. The results show that a large part of farmers had taken loans, in equal shares from institutional as well as informal sources (Meeta and Rajivlochan 2006; Mohanty 2004), regardless of their size of landholding (Deshmukh, Gohad, and Werulkar 2010; Mohanty and Shroff 2004). Additionally, Mishra (2006a,c), points out that in his study the debt burden was higher in suicide cases than in non-suicide controls. Another aspect related to indebtedness is the government relief package. According to Kalamkar and Shroff (2011), most farmers knew about the package and, concordant with Kale, Mankar, and Wankhade (2015), they found that more than half of the farmers benefitted from the proposed measures. The relief package was successful in terms of seed replacement, an increase of irrigation in the area and a growth in livestock (Kalamkar and Shroff 2011). Also Mohanty and Shroff (2004) argue that farmers could recover from costs of cultivation. On the

contrary, Mohanty (2004) detected that with 93% almost all farmers were unable to recover from crop failure.

As a consequence of this high level of agrarian distress many farmers in Maharashtra see no alternative than to commit suicide (Kale, Mankar, and Wankhade 2014). The predominant method is according to Kale, Khonde, and Mankar (2014) and Mishra (2006a,c,d) the consumption of pesticides or fertilizers. This method of suicide is, according to Mishra (2006a), more common among farmers than in the overall population. Yet, in a study on poisoning cases in a medical clinic in Yavatmal, Bhatkule (2006) found that suicide victims were, by a majority, laborers, but with 8.7% only in few cases farmers. Nevertheless, Bhatkule (2006) points out that most of the patients came from rural areas and poisoning was mainly due to the consumption of pesticides. Furthermore, the poisoning cases were predominantly young males (26 to 35 years) (Bhatkule 2006).

### *Suggestions for Improving the Situation of Farmers in Maharashtra*

The suggestions made in the selected studies refer to the agricultural situation, credit delivery and support services. About half of the propositions were expressed by the interviewees, i.e. families and acquaintances of the deceased, while the other recommendations were made by the authors of the studies themselves.

In respect of the agricultural situation, new and diversified crop patterns (Behere and Behere 2008; Deogirikar and Topare 2008) and the shift back to organic farming techniques (Guha 2012) are demanded. In addition to that, Behere and Behere (2008) as well as Narayana-moorthy (2006) call for an improvement of the local infrastructure. Also the interviewees themselves emphasize this aspect asking for the provision of (drip) irrigation facilities (Gavhane, Ekale, and Sidham 2012; Kalamkar and Shroff 2011) as well as subsidies for electric supply and fences against wild animals (Kale, Mankar, and Wankhade 2014). Interviewees in the study by Kalamkar and Shroff (2011), furthermore, propose an increase of extension services and animals in the relief package. In order to offer additional sources of livelihood, Deogirikar and Topare (2008), moreover, suggest that the agricultural production should be extended to dairy farming and the production of cashews in coastal areas.

Another important aspect mentioned in the suggestions is the provision of credit. Thus, an improved credit delivery system (Behere and Behere 2008) and the creation of an insurance scheme (Guha 2012) are demanded. With respect to insurance, interviewees in the study by Kale, Mankar, and Wankhade (2014) suggest that the risk assessment should be conducted at village level. In order to enhance the situation of farmers, and in particular of the families of deceased farmers, old loans should be waived (Gavhane, Ekale, and Sidham 2012). Further suggestions by interviewees refer to the establishment of remunerative prices for farm products to meet consumption needs (Gavhane, Ekale, and Sidham 2012; Kale, Mankar, and



Wankhade 2014; Narayanamoorthy 2006) and the provision of alternative non-farm occupations (Gavhane, Ekale, and Sidham 2012).

Concerning support services, immediate government succor and counseling (Dongre and Deshmukh 2012; Gavhane, Ekale, and Sidham 2012) as well as the creation of community or self-help groups (Deogirikar and Topare 2008; Guha 2012) are demanded. Furthermore, interviewees ask for the payment of relief packages at village instead of district level (Dongre and Deshmukh 2012) and propose better access to information on government schemes (Kale, Mankar, and Wankhade 2014). Additionally, mental health services at primary care level should be strengthened (Dongre and Deshmukh 2012). According to Behere and Behere (2008), religious and especially Hindu religious leaders could play a decisive role in preventing suicides by farmers.

#### **4.2.2 Findings Depending on Approach**

This thesis is not only aimed at investigating how quantitative and qualitative research analyzes farmers' suicides or what is characteristic about farmers' suicides in the state of Maharashtra, but mainly also how different research methodologies and approaches might influence the findings.

While the first two aspects have already been covered, this subsection deals with the link between the underlying approach and the resulting conclusions about the phenomenon of farmers' suicides in Maharashtra. At first, a brief description of the findings depending on approach will be given. Since this summarizes the first part of this chapter, it will be kept short. Nevertheless it is crucial for comparing the findings resulting from the different methods. Based on this, potential ways of analyzing the phenomenon of farmers' suicides in the future will be proposed referring to the advantages and shortcomings of the three approaches (quantitative, qualitative and hybrid).

As already mentioned above, quantitative studies on farmers' suicides prevail in the state of Maharashtra. Most of these studies focus on the reasons for farmers' suicides or the characteristics of deceased farmers. About a third of the quantitative studies relied exclusively on literature, whereas the majority conducted their own analysis, predominantly using interviews. In case of literature-based studies, most common findings of secondary sources were described. Otherwise, those with their own data collection, the results are presented using statistics. According to the percentages in most of the approaches, unprofitability of agriculture due to high costs, indebtedness, and crop failure due to absence of irrigation are the statistically identified causes leading to farmers' suicides. The most frequent characteristics of the deceased farmers include male gender, young and middle age as well as being indebted and consuming pesticides. Besides these commonly researched aspects, there are only few which have a different focus. For instance, Bhatkule (2006) concentrates on poisoning cases

in general, while Tiwale (2010) analyzed the impact of a specific governmental policy subsidizing liquor. In addition to that, also Mishra (2006d) provided a specific study since one part of his publication is dedicated to the analysis of different secondary sources on farmers' suicides. He found that while media reports have the tendency to exaggerate, governmental reports basically evaluate whether suicide cases are eligible for obtaining compensation.

Qualitative studies, on the other hand, applied a totally different study design with smaller spatial scales and sample sizes. Nevertheless, all of these studies focused – concordant with the majority of quantitative studies – on the reasons for farmers' suicides. Qualitative studies collected their data based on (in-depth) interviews and (focus) group discussions. Although this approach does not aim at statistical representativeness, all three studies present their findings using some selection criteria. Gavhane, Ekale, and Sidham (2012) simply list "*some of the observed causes of suicide*" without arguing on what basis the aspects have been selected. Similarly also Kakde (2006) identified factors common in most or all of the farmers. On the contrary, Dongre and Deshmukh (2012) evaluated their results obtained from free listing and pile sorting using Smith's salience score. This value seems useful to them since it is a means for counting word frequency and word rank across and within lists referring to significance. In reference of the results of qualitative studies, indebtedness, crop failure due to environmental problems but also the lack of support and family or health problems were mentioned as important reasons for farmers' suicides. Kakde (2006), furthermore, was the only study to address the situation of female widows of deceased farmers. She detected that all of them feel guilty for not having supported their husbands adequately. Additionally, all three qualitative studies offered suggestions and desires raised by informants concerning the improvement of the agrarian situation. The suggestions mainly refer to the establishment of adequate support systems, and remunerative prices for farm products.

With respect to hybrid studies, it must be said that half of them provide a situation assessment of farmers while the other two concentrate on the reasons for farmers' suicide. Not only because of their use of multiple methods but also due to their medium scale and sample sizes these studies were considered hybrid. The publications were divided into a first part which contains a (statistical) overview of farmers' suicides in Maharashtra or the specific study area, respectively, and a second part listing detailed case studies. In case of Mohanty (2004, 2005) this second part is dedicated to the assessment of whether the findings are consistent with Durkheim's theory on suicide. In particular, Meeta and Rajivlochan (2006, 49) emphasize that case studies should be given more weight. This study is, furthermore, unique since it assessed previous governmental studies on farmers' suicides by Dandekar et al. (2006) and Mishra (2006c). Meeta and Rajivlochan (2006) argue that these studies fail in terms of providing a holistic understanding of farmers' suicides due to their narrow focus on social and economic causes. Data have been obtained mainly by means of interviews, but also focus group discussions were held (Dandekar et al. 2006) and existing literature was

analyzed (Mohanty 2004, 2005). According to these hybrid studies, risk factors and reasons for suicide include predominantly indebtedness, crop failure, economic distress and lack of information. In respect of the characteristics of the deceased farmers they mostly refer to outstanding loans and small landholdings as common among suicide victims.

This short summary of findings linked to the underlying scientific approach reveals that in all approaches the main study objective was to assess the reasons for farmers' suicide. The findings concerning these causes are quite similar in quantitative and hybrid studies, whereas qualitative studies also highlight other aspects such as family responsibilities. Furthermore, while quantitative and hybrid studies also analyzed common characteristics of farmers – which are more or less linked to the risk factors and reasons for suicides – qualitative studies offered additional insight into the suggestions made by the informants. Hence, altogether the findings of the approaches individually draw a consistent picture of farmers' suicides in Maharashtra. When viewed as a whole, the approaches supplement each other well and provide a more holistic understanding of the phenomenon. Unfortunately it was not possible to conduct a more detailed analysis of the findings according to the chosen scientific approach since the studies are not matching in terms of scale, study area or study objectives. Nevertheless, based on the information provided by the studies it is possible to list some of the advantages and shortcomings of the different approaches and suggest future ways of investigating the phenomenon.

### **4.3 Improving Research on Farmers' Suicides in Maharashtra**

Before making any recommendations on how the phenomenon of farmers' suicides should be studied in the state of Maharashtra in the future, important advantages and shortcomings of the three approaches will be summarized. These pros and cons completely depend on the particular study design of the approach (cf. Chapter 3.3).

#### ***Shortcomings and Benefits of Previous Approaches***

Quantitative studies aim to objectively describe populations by means of testing certain hypotheses. They try to identify relationships (mainly correlations) and make predictions about future trends by measuring predefined variables and asking narrow questions. On the basis of this study design, it is possible for quantitative studies to obtain objective results and study larger groups. Further advantages of quantitative studies are that their findings are generalizable and comparable as well as that results are comparatively faster to obtain. Moreover, they can also be repeated and then compared over time. For instance, based on the same study design, it is relatively easy to make a statement about where farmers' suicides are more prevalent or which causes are dominant. By means of statistical computation a comparison between districts or between Maharashtra and other Indian states can be drawn simply by using percentages. Moreover, an order of priorities can be determined using statis-

tics (e.g. Mishra 2006c). This is of special importance, for instance, with regard to the launch and allocation of governmental measures and relief packages.

Nevertheless, there are disadvantages of this approach too. These drawbacks are mainly related to the narrow focus and design of the study using predefined variables and being limited to specific hypotheses (Carey 1993). Such a study design ignores all other aspects which might be of importance but do not match the predetermined setting. Furthermore, it must be pointed out that suicide is an individual act, often based on very personal reasons. Thus, a simple reduction to single aspects which might be statistically significant must not always represent the real situation. Hence, only correlations can be detected but not necessarily causal relationships. As an example, the question of who has benefitted from the governmental relief package can be mentioned. In the study by Kale, Mankar, and Wankhade (2015) the number of farmers has been analyzed and presented by percentages citing the specific measures. However, from these percentages no conclusion can be drawn with regard to the real benefit perceived by the families since a control group would be needed. Furthermore, it is impossible to deduce whether the package had a long-term effect or even alleviated the problem of farmers' suicides.

Qualitative studies, on the other hand, intend to understand events and manners from their informants' perspective. In doing so, they focus on smaller groups of individuals asking broad and open-ended questions. Hence, their study design is rather explorative and inductive. Furthermore, instead of having a clear, predefined procedure in mind, research is adapted during the study and in the field. In contrast to the quantitative approach which is rather top-down, the qualitative one is more subjective, hypothesis generating and bottom-up. Since its aim is the understanding of one specific phenomenon, the qualitative approach goes beyond mere description providing an in-depth explanation. Referring to farmers' suicides, this is an advantage as these deaths can be analyzed in their local context including, for instance, community perceptions and consequences for the families of the deceased (e.g. Kakde 2006). Although the scale in terms of study area and number of cases studied is smaller, the qualitative approach is flexible with respect to the incorporation and consideration of new aspects which have not been thought about before. This is valuable since (farmers') suicides mostly result from a combination of diverse causes and cannot be reduced to one single parameter or be ranked in a hierarchy of predetermined factors. Another advantage of this approach is the presentation and validation of the data obtained in the field to the informants. This was, for instance, also done by Dongre and Deshmukh (2012).

However, besides these advantages there are also disadvantages of the qualitative approach. Qualitative research is often criticized for not being scientific due to subjective assessments and a lack of comparability (Carey 1993). The relatively small sample size might lead to findings which are very specific to the local context but cannot be found elsewhere, and thus cannot be generalized. For instance, a study on farmers' suicides in one village on

the basis of detailed discussions and interviews might detect that committing suicide is in general condemned and only allowed in case of being unable to fulfill social responsibilities. While such circumstances might to a large part influence the pattern of farmers' suicides in this particular village, it could by chance be totally different in the neighboring village where suicide might be considered as a courageous step. Furthermore, also the environmental conditions might differ, which are not obvious by only presenting one single local case study. This is a shortcoming especially with respect to the measures taken to improve the situation where a broad picture is needed.

With respect to hybrid studies, it must be mentioned that they do not necessarily combine all positive aspects of quantitative and qualitative studies and leave out their disadvantages. On the contrary, the value of hybrid studies also depends on the design of the study. Since this approach uses multiple methods, the data obtained is also a combination of words and variables. The selected studies in this thesis comprise a statistical overview as well as single case studies (Dandekar et al. 2006; Meeta and Rajivlochan 2006). In case of Mohanty (2004, 2005), the results are related to Durkheim's theory of suicide and are, thus, qualitatively evaluated. The main advantage of these studies is the presentation of quantitative and qualitative findings. As a result, it is not only possible to obtain information on the broad situation of farmers' suicides in Maharashtra or the particular districts, respectively, but also on single cases and their personal and causal background. Hence, comparability is ensured, trends can be observed and conclusions can be drawn on how the phenomenon is made up and how the problem could be tackled. Furthermore, particular cases can be used to gain a better understanding and an in-depth explanation from the perspective of the relatives and acquaintances of the deceased. Yet, the selected hybrid studies do not present an ideal example of how to improve research on farmers' suicides in Maharashtra. This is because these studies merely string together the findings from both approaches without linking them or evaluating the different results.

### *Suggestions for Future Research on Farmers' Suicides in Maharashtra*

So, how could research on farmers' suicides in Maharashtra be improved? First of all, it must be emphasized that (farmers') suicide is a highly relevant societal but also problematic research topic. The reasons for this are, on the one hand, the difficulty to distinguish between suicide, accident and murder and, on the other hand, the differences in the implementation and usage of this distinction in statistics or by authorities. Furthermore, it is impossible to ask the persons themselves. Hence, although research can focus on family members or those who survived a suicide attempt, there is always a partial uncertainty involved. Before suggesting a new approach for studying farmers' suicides in Maharashtra, some general observations must be made. First of all, Maharashtra as a study area seems to be too large to be treated as one geographic unit. This is due to regional variations, for instance between the western part including Vidarbha, which is much more affected than the rice cultivating east-

ern part (Deshmukh 2010). Thus, the phenomenon should be analyzed at least on district level. In order to understand the conditions and causes of these suicides, research should be bottom-up and not top-down. Secondly, the selected studies also revealed that regardless of approach there is a tendency to count certain aspects. This might be in order to assess their importance or to give weight to their priority. Also the method used in this thesis recorded frequencies and counted aspects according to certain themes. As a result, certain countability should be ensured by the new approach as well.

Quantitative methods are needed in order to ensure comparability, to detect geographic as well as temporal trends and to identify the most affected areas. On the other hand, due to the scarcity of qualitative research, there is a huge need to conduct more of these studies. This would help to better understand the problem of farmers' suicides. Qualitative research is especially important since these studies are also able to give insight into other aspects which are not considered in quantitative studies. The reason for this is that the results of quantitative studies are often summarized according to what is most common, whereas qualitative methods also reveal a personal assessment by their informants on what they perceive as the most important. Additionally, the combination of several factors is oftentimes better displayed in case studies than in overall percentages. This aspect is particularly important since (farmers') suicide is a multifaceted phenomenon. Another reason why qualitative studies should be fostered in the state of Maharashtra is the aspect of suicide reporting. Often, family members are anxious of reporting that the death was suicidal since they fear the stigma associated with it (Radhakrishnan and Andrade 2012). Furthermore, suicide is often considered as a "bad death" (Münster and Broz *forthcoming*). In case of quantitative studies, where only single parameters are collected, they might be remembered of the official police recording. Hence, it might be valuable if a researcher within the framework of a qualitative study takes the time to establish mutual trust and does not exert pressure on the informants to obtain data.

Of course, also a new approach has to have a certain focus and concentrate on specific aspects similar to previous studies. It will not be possible for one large study to improve the overall state of research. Instead, a combination of quantitative and qualitative approaches which do not merely coexist, but systematically supplement each other seems to be the most promising study design. In order to obtain a holistic picture of the phenomenon, the whole research, consisting of several relatively smaller studies which are harmonized to one another, should be targeted to encompass the aforementioned advantages of both approaches. Such a combination of quantitative and qualitative studies can be achieved using mixed methods research. Furthermore, also interdisciplinary research seems to be promising since multiple scientific disciplines are able to capture a certain phenomenon – such as the complex phenomenon of (farmers' suicides) – to a greater extent.

## 5. DISCUSSION

In this chapter, the findings of this thesis will be discussed in comparison with other, already existing theories. Consistent with the overall structure of this thesis, also this chapter is subdivided into three parts focusing on (i) the methodology used in the studies for analyzing suicide, (ii) the findings in respect of farmers' suicides, and (iii) a potential combination of quantitative and qualitative studies.

### 5.1 Methodology Used in Research on (Farmers') Suicides

This first part of the discussion chapter deals with quantitatively and qualitatively oriented research on the topic of suicides. It is fairly common to discuss these two approaches in other contexts too. Furthermore, as pointed out in Chapter 3, such a distinction has a long history, emanating from the debate between Durkheim (1951) and Tarde (1903). In order to understand the current state of research in Maharashtra, it is crucial to consider once again the theoretical background in which such a differentiation evolved. In the following, an attempt is made to explain the prevalence of quantitative research on farmers' suicides, the potential problems of using statistics as well as the (dis)advantages resulting from both approaches.

#### 5.1.1 Prevalence of Quantitative Research in Maharashtra

With respect to the prevalence of quantitative studies the writings of Jack Douglas (1966) and Ian Hacking (1991, 1994) must be mentioned. Both argue that in the course of time and especially since the onset of industrialization, research has increasingly focused on numbers and quantification. In his review on sociological meanings of suicide, Douglas (1966), for instance, distinguishes between two methods: (i) the case study method and (ii) the statistical method. According to the case study method, actions can be attributed to certain meanings which are understood by the whole society. This method, which studies individual acts of suicide, was increasingly formalized but rejected by Durkheim and moral statisticians. As a result, medical statisticians, probability theorists and demographic workers developed the statistical method as a combination of their approaches. This second method was applied by Durkheim as well.

In his historical overview on statistics, Hacking (1991) also links the increasing focus on numbers with industrialization and modernization. He argues that previously there has been a prevalent belief in determinism, which implies that events are defined by laws of nature. Later, between 1820 and 1840, determinism had been eroded due to the fact that numbers were increasingly used to describe social phenomena. As a result of this "*avalanche of numbers*", a bureaucracy of statisticians in the so-called moral science evolved collecting data on

all aspects of human life. Also in respect of research on suicide, Hacking (1994) describes how this transformation has taken place. He illustrates that suicides were first seen as resulting from motives which were studied by moralists, and were then regarded as stemming from causes, i.e. studied by physicians. Hacking (1994) attributes this shift towards statistics to a connection which has been made between suicide and madness.

Concerning the prevalence of quantitative studies on farmers' suicides in the state of Maharashtra, further studies provided by Douglas (1966) and Hacking (1991, 1994) revealed that not only advantages of quantitative studies are the decisive factors. On the contrary, also a more general tendency in research to concentrate on numbers and quantification as a means to describe social phenomena is crucial. Other important aspects are, of course, also the pioneering sociological study *Le Suicide* by Durkheim (1951) as well as the scientific disciplines which conducted research in the state of Maharashtra.

### **5.1.2 Potential Problems in Using Statistics in Suicide Research**

Yet, regarding numbers and statistics it must also be pointed out that certain disadvantages and problems result from their usage in research. While Tarde (1903) criticized Durkheim (1951) for his broad focus on society as a whole rather than on individuals, Douglas (1966, 1967) even argues that Durkheim (1951) uncritically relied on official data. He states that official statistics on suicide cannot be compared since there is no homogenous meaning of the term 'suicide' or suicide rates, in general. As a result, Douglas (1966, 1967) claims that official statistics on suicide are socially constructed. These data are, according to him, unreliable as they are based on human judgments.

Concordant with Douglas (1966, 1967), also Hacking (1991, 1994) as well as Rose (1991) focus on the impact of statistics and numbers in research. Hacking (1991, 1994), for instance, argues that statistics enable the construction of social categories and laws about society, and are thus a means of power for those who use them. Such classifications and laws, in turn, shape the way people perceive themselves and their actions. In order to explain this in more detail, Hacking (1999, 25-27) gives the idea of the child viewer as an example. He argues that although the fact that children watch television is uncontroversial, there has been no such category of child viewer before its description as a social problem. As soon as the category is established, the notion occurs that such a definite kind of person exists. As a result, Hacking (1999) states that a certain classification as well as the reification of it are socially constructed neglecting the individuals themselves.

In addition to Hacking (1991, 1994), also Rose (1991) emphasizes the power emanating from numbers. In his review article he investigates the connection between quantification and democracy arguing that "*acts of social quantification are politicized*" (Rose 1991, 675). This politicization can, according to Rose (1991), be attributed to the way social phenomena are



measured. In agreement with Hacking (1999), he argues that their description as well as statistics in general are based on (political) judgments and choices about what and how to count. Furthermore, also the idea about a certain aspect or phenomenon and the interpretation of the gathered data are socially coined (Hacking 1999; Rose 1991). Rose (1991) illustrates that in a democratic government and beyond, numbers are crucial since they legitimize political power, allow standardization, aggregation and control of certain aspects and, thus, constitute an own reality.

Besides this rather theoretical critique of official statistics, also current studies in the field of public health are dealing with the accuracy of statistics in suicide research. Sainsbury and Jenkins (1982), for instance, analyze whether suicide statistics are able to serve as accurate data in epidemiological research. They argue that suicide statistics are questioned since many previous studies found misclassifications of suicides as undetermined or accidental deaths or detected an underreporting of suicides. Yet, Sainsbury and Jenkins (1982) refer to several other publications and state that suicide statistics have a long history and because of the stability in suicide rates official statistics can be used as reliable data in comparative epidemiological studies.

Another study investigating the limitations of official suicide statistics was conducted by O'Donnell and Farmer (1995). They analyzed unnatural deaths which occurred in the London Underground railway system over a five-year period using verdicts by coroners and statements by witnesses. O'Donnell and Farmer (1995) found that suicides were in general underestimated, and suicides were ascertained more frequently in women than in men. In order to overcome the underreporting and unreliability of these statistics, they demand a better scrutiny by coroners by means of analyzing and reclassifying all reports on unnatural deaths. Concordant with O'Donnell and Farmer (1995) also Tøllefsen, Hem, and Ekeberg (2012) found that suicides were underreported. Tøllefsen, Hem, and Ekeberg (2012) conducted a systematic literature review in order to assess the reliability of official suicide statistics. They focus on studies in which causes of death are re-evaluated and in which two causes of death are compared. A third option, which they neglected, is calculating suicide rates by adding other categories of death, such as undetermined deaths. Besides an underreporting of suicides, they found a general lack of studies analyzing the reliability of suicide statistics as well. As a consequence, Tøllefsen, Hem, and Ekeberg (2012) state that the reliability of suicide statistics is questionable. Moreover, they emphasize that assessing the reliability is difficult due to an absence of some suicides in mortality statistics and a demanding distinction between accidental, natural and suicidal death. As a conclusion, they call for further analyses incorporating not only reliability but also validity of suicide statistics.

As a summary, additional theoretical studies on the impact of (official) statistics in research as well as research on suicide reveal that the use of statistics must be treated with caution. Hacking (1991, 1994, 1999) and Rose (1991) refer to the power resulting from the use of sta-

tistics while O'Donnell and Farmer (1995) as well as Tøllefsen, Hem, and Ekeberg (2012) emphasize the unreliability of suicide statistics due to underreporting. Hence, with respect to farmers' suicides in Maharashtra, the question must be raised whether the category of farmers' suicides in statistics is socially constructed. Similar to the child viewer mentioned by Hacking (1999) also the farmer committing suicide has certainly existed beforehand. However, an important transformation occurred with the separate consideration of farmers' suicides as a category in suicide statistics. Adding such a specific class leads to the reification and reiteration of a group of people based on a certain profession which might not be aggregated in such a way. The reason for this is that comparable to the child viewer no such type as 'the farmer committing suicide' exists. On the contrary, it is also always crucial to consider the individuals themselves and their personal situation. Otherwise, important aspects might get lost and the category gets more and more established without questioning its content anymore. For instance in India, farmers in official statistics are only those who own land and, thus, are males (Münster 2012; Nagaraj 2008). Since the existing studies on farmers' suicides in Maharashtra mostly generated their own data and did not use official suicide statistics such as provided by the NRCB, the results are difficult to compare. The reason for this is, as Hacking (1999) and Rose (1991) point out, that the measurement of a phenomenon as well as the interpretation of the data always involves a certain social and personal background. In addition to that, it must also be pointed out that such statistics depend on the gathered data. More precisely, whether the data stems from police reports or own field research, suicides might be underreported and, thus, distort reality.

### **5.1.3 Potential Shortcomings of Quantitative and Qualitative Research**

As a consequence of these problems associated with the use of (official) suicide statistics, Douglas (1966, 1967) proposes a modified case study approach to analyze social meanings of suicides. His methodology relies on observations of communication and the use of language as well as on the meaning of the term 'suicide'. Furthermore, the meanings that individuals associate with suicide should be derived from diaries and the analysis should offer contextual elements that trigger suicides. Nevertheless, as Douglas (1966) concludes, such a study of social meanings of suicide is difficult as well. He attributes this difficulty to the fact that these meanings are always constituted by the individuals committing suicide.

In addition to what has already been mentioned, Macdonald (2007, 226-229) cites two fallacies regarding quantitative and qualitative research on suicides. He argues that suicides are analyzed based on case studies or statistics – with both approaches having their respective shortcomings. According to the case study method, a sequence of personal events and a certain type of behavior is investigated similar to a life story. All these biographical data are supposed to be relevant to the final suicide, with stressful situations being decisive. Yet, Macdonald (2007) points out that such a relation cannot be assumed. On the contrary, it is rather impossible to explain whether these potential suicidal elements in fact induce suicide.

Moreover, Macdonald (2007) also points out that if the final suicidal death is removed, the whole explanation remains simply a life story. Another crucial aspect of this case study fallacy is the lack of comparability and generalizability of these individual case studies. Macdonald (2007) emphasizes that these stories are so distinct and complex due to their long list of individual elements that it is difficult to draw any conclusions.

The statistical approach, on the other hand, does not consider all preceding elements and events but simply investigates the aspect leading to the final death. These decisive factors are then aggregated and correlations between them can be compared with other external parameters. Yet, all potential other elements, which might have forced an individual to commit suicide, are neglected. For instance, Macdonald (2007, 228) explains that in an analysis of suicides caused by jealousy only those deaths are counted where the deceased intended to die as a result of jealousy. According to Macdonald (2007, 228) this approach “*puts in one bag things that are incommensurate*”. In addition to that, Macdonald (2007) also describes the fallacy as being caused by simply listing ‘suicide’ in global mortality rates without further distinction in respect of the causes.

As a result, Macdonald (2007) concludes that the study of suicides offers two options: Either the analysis holistically concentrates on individual suicide cases without enabling any conclusions on other cases, or the focus is on suicidal deaths, which implies that no background knowledge can be considered. Concerning an anthropological study of suicides, Macdonald (2007, 254-268) argues that researchers can follow an ethnopsychiatric case study method or a rather statistical socio-psychological approach.

With regard to farmers’ suicides in the state of Maharashtra both approaches, quantitative as well as qualitative and additionally also hybrid studies, were applied to investigate the phenomenon. Hence, the case study as well as the statistical fallacy must be considered when interpreting the studies’ results. In respect of qualitative studies it must again be pointed out that not many of them have been conducted in the state of Maharashtra. This might be attributed to the lack of comparability and generalizability mentioned in Macdonald’s (2007) case study fallacy. Although interviewed relatives of deceased farmers often mention one major aspect contributing to suicide, it is difficult to estimate the decisive factor leading an individual to commit suicide. Nevertheless, also the findings of this thesis revealed that qualitative studies offered more complex and additional explanatory factors due to the fact that the whole life story of an individual has been considered in the case studies. Especially in hybrid studies, it is apparent that case studies are often simply listed one after another without relating them to other cases. Another remarking aspect is that qualitative and hybrid studies as well as the methodology applied in this thesis are almost unable to dispense with counting. This might be the reason why quantitative studies on farmers’ suicides are that much more prevalent. However, as it has been argued before, quantitative studies might also lead to false conclusions. As Macdonald (2007) argues, the statistical fallacy implies that only

the suicidal deaths are taken into consideration while neglecting potentially important other factors contributing to such a step. It must be pointed out in respect of both approaches that the deceased cannot be asked themselves which complicates the analysis.

## 5.2 Findings in Respect of Farmers' Suicides

After the methodological structure of quantitative and qualitative studies has been discussed on the basis of the theoretical background, this subsection will evaluate the findings regarding farmers' suicides in Maharashtra at an all-India level. Since most of the facts derived from the current state of the art have already been described in Chapter 2, this subsection will focus only on the most important aspects.

The findings of this thesis show that farmers' suicides in Maharashtra were most commonly studied focusing on their reasons, the characteristics of deceased farmers, and the suggestions made for improving the situation (Chapter 4). On the other hand, most studies on suicide at an all-India level concentrate almost exclusively on the characteristics of the deceased people. In respect of general suicides, the majority of the studies agree that young to middle-aged men, mostly in age groups between 15 to 29 years and 30 to 44 years, are at a particularly high risk of committing suicide (Mohanty et al. 2007; Patel et al. 2012; Radhakrishnan and Andrade 2012; Vijakumar 2010). Further identified risk factors for suicide are, amongst others, family and social problems, physical or mental illness, alcohol addiction, economic difficulties or unemployment, and employment in agriculture (Patel et al. 2012; Radhakrishnan and Andrade 2012; Vijakumar 2010).

In respect of farmers' suicides, studies at an all-India level found that marginal farmers and those cultivating cash crops, especially cotton, are at a particular risk of committing suicide (CHGRJ 2011; Kennedy and King 2014). Kennedy and King (2014) even point out that the inter-state variation of suicide rates can be explained by the proportions of marginal, cash crop producing and indebted farmers which significantly contribute to a rise in suicide rates. Also the results of this thesis highlight that small and marginal farmers cultivating cash crops are more frequently committing suicide. The reasons identified for farmers' suicides all over India are in agreement with the findings of this thesis, as well. Hence, the transformation of the Indian agriculture, indebtedness aggravated by social responsibilities, poor rural infrastructure as well as the failure of government compensation programs must be mentioned (CHRGJ 2011). Another important aspect is also cited in the *Situation Assessment Survey of Farmers* by the NSSO (2005). The survey reveals that with 40% almost half of the interviewed farmers would change their profession if possible. The reason they cite for pursuing a different career is the non-profitability of agriculture. This finding is concordant with what has been mentioned previously in this thesis: Due to a lack of non-farm alternatives and unremunerative prices in agriculture, many farmers see themselves as forced to commit suicide. Altogether, these aspects are concordant with the findings on farmers' suicides mentioned in

this thesis. While social and health issues are described as decisive and primary factors for general suicides by all-India studies, the analysis provided in this thesis reveals that economic and agricultural reasons are cited in the first place.

Concerning the geographic distribution of suicides, Mohanty et al. (2007) and Patel et al. (2012) found that most suicides occur in rural areas. This is attributed to a higher availability of pesticides and a greater lack of medical services in rural areas (Patel et al. 2012; Radhakrishnan and Andrade 2012). Since the studies analyzed in this thesis focused on farmers' suicides, the results show that suicides occur predominantly in rural areas, as well. Similarly and with respect to the method of suicide, almost all studies assent to poisoning as well as hanging as most frequent means (Balayannis and Cook 2015; CHRGJ 2011; Mohanty et al. 2007; Patel et al. 2012; Radhakrishnan and Andrade 2012). Also this thesis concludes that poisoning, and especially the consumption of pesticides and fertilizers, must be considered as the most common method of suicide.

Besides the identification of risk groups, studies on general suicides in India also provide suggestions for future interventions. Patel et al. (2012), for instance, demand an earlier identification of vulnerable persons and (better) treatment options for them. Furthermore, they argue that suicide prevention should be set as a national priority. Radhakrishnan and Andrade (2012) as well as Vijakumar (2010) claim that prevention strategies must be multidimensional and culturally-sensitive in order to yield a benefit. Such prevention strategies could, for instance, include the establishment of community activities and suicide prevention centers in collaboration with research and media (Vijakumar 2010). With regard to farmers' suicides, Nagaraj (2008), for instance, claims that (farmers') suicides must be viewed as a multifaceted phenomenon which should be investigated taking into consideration the vulnerability of the respective region, the current agrarian crisis and the absence of non-farm opportunities. The findings of this thesis show more concrete suggestions, such as diversified crop patterns, improvement of the local infrastructure, provision of credit, remunerative loans for farm products, immediate help by the government and counseling. All propositions have in common that they ask for alternative non-farm occupations and, furthermore, self-help groups and measures at the community level.

Another important aspect that must be mentioned is the underreporting of suicide cases. In respect of general suicides, several studies agree that official statistical data on suicides are underestimates (CHGRJ 2011; Patel et al. 2012; Radhakrishnan and Andrade 2012; Vijakumar 2010). Radhakrishnan and Andrade (2012), moreover, state that especially in rural areas data on suicides is incomplete. This can be attributed to the fact that family members often cite illness or accident as reasons for death as they fear the stigma associated with suicide. In their study based on data obtained during a nationally representative survey by the RGI, Patel et al. (2012) found an underreporting of suicide deaths by the NCRB by about 35%. Also with respect to farmers' suicides, the underestimation of suicides has been discussed in

various studies. Kennedy and King (2014) and Nagaraj (2008) argue that the underestimation of farmers' suicides is particularly severe since most female farmers are not included in the statistics. Furthermore, it is argued that in the NCRB data, farmers are portrayed as one occupational group without further distinction according to crop, caste or size of land (CHGRJ 2011).

All studies referred to in this thesis that used statistical information on farmers' suicides obtained their own data during fieldwork. As a result, it is difficult to compare the absolute numbers. The reasons for this are not only differences in the study setting and statistical analysis but also, and most importantly, the definition of who counts as a farmer. While according to the NCRB and NSSO (2005) farmers must, amongst other criteria, possess a title to land and must be engaged in agricultural activities (Münster 2012; NSSO 2005), other studies might also include tenant farmers, female farmers or migrants. These differences in the classifications are often not defined in the particular studies and thus complicate their comparability. In addition to that, it is also crucial to be aware of the potential reason for underreporting in official statistics, namely the fact that attempted suicide is considered a criminal offense. Yet, since the government of India recently decided to repeal Section 309 of the *Indian Penal Code* (IPC), attempted suicide has been decriminalized (Jain 2014). As a consequence, the stigma and fear associated with suicide might decrease in the years to come. Surely, this is not a process of only few years but it would be highly valuable to analyze whether in the future a transformation takes place with regard to the reported number of suicides. Most probably, such a change will take place not only concerning official data but also in individual studies on (farmers') suicides.

### **5.3 Future Research on Farmers' Suicides**

In this last part of the discussion, the question of how future research on farmers' suicides in Maharashtra should be designed is addressed. As pointed out above, the best solution would be to combine the advantages of quantitative and qualitative research using a mixed methods approach. Since such a mixed methods approach unites the benefits of quantitative and qualitative research it is also proposed for the study of health in general (Carey 1993), and suicide in particular (Kral, Links, and Bergmans 2012). It is argued that such a combination will lead to a more thorough understanding of the respective phenomena. With respect to research on suicides, Kral, Links, and Bergmans (2012) give two examples in which a mixed methods approach is extremely valuable: (i) risk factors for suicide, and (ii) suicide prevention. Concerning risk factors they emphasize that objective and quantifiable aspects and subjective and personal estimations are crucial. Thus, a mixed methods approach should focus on both types of information. Moreover, with regard to suicide prevention, Kral, Links, and Bergmans (2012) point out that the evaluation of such measures falls short if only statistical

parameters are considered. On the contrary, in order to establish a successful program, they state that individual aspects and experiences should be incorporated as well.

Based on this, regarding future research on farmers' suicides in Maharashtra the question is how a prolific combination of quantitative and qualitative studies could look like. One possibility is to improve quantitative studies adding qualitative research by means of an explanatory design (Kral, Links, and Bergmans 2012). This could, for instance, be conducted by analyzing quantitative studies and validating their findings with the help of qualitative methods. Thus, qualitative research could aim at assessing why certain patterns apparent in statistics are what they are and not different. Another example would be to perform qualitative research in areas where the conditions seem to be similar but the suicide rate is different, or where suicide rates have changed notably in the last years. Such a methodology will contribute to a more detailed knowledge and understanding about the influence of society and culture on (farmers') suicides. Using such a mixed methods approach, former quantitative studies could be enhanced in terms of further explanations and the interpretation as well as the validation of findings on farmers' suicides (Johnson, Onwuegbuzie, and Turner 2007; Kral, Links, and Bergmans 2012). The other option is an exploratory design in which qualitative studies are enhanced using existing statistics or quantitative research, respectively. This implies that qualitative studies and their findings could be evaluated in much broader contexts. Furthermore, such an approach will add generalizability and comparability (Kral, Links, and Bergmans 2012). As a result, regarding farmers' suicides in Maharashtra, it is of great importance to conduct at least pilot studies on both options in order to assess their feasibility and impact on research.

## 6. CONCLUSIONS

This thesis investigated the current state of research on farmers' suicides in the state of Maharashtra, India. The phenomenon of farmers' suicides has been analyzed based on a methodological as well as a thematic level. The methodological examination included the classification of existing studies on the phenomenon in quantitative, qualitative and hybrid studies. Based on this division the particular methods used for analysis and the respective findings were extracted and compared. As a result, statements can be made concerning the disadvantages and benefits of all three approaches as well as regarding the current state of research on farmers' suicides in Maharashtra.

Similar to general suicides, research on farmers' suicides in Maharashtra is predominantly quantitative. While an ideal quantitative study was assumed to use official NCRB data on suicides, all studies analyzed in this thesis generated their own statistical data. Qualitative studies, on the other hand, mostly relied on interviews and focus group discussions. In addition to that, a large part of existing research was also conducted on behalf of the government. In general, it can be observed that with rising numbers of suicides among farmers, interest and research on the phenomenon is increasing as well.

In respect of the structure of these studies, it is apparent that, regardless of approach, most research focused on (i) the reasons for farmers' suicides, (ii) the characteristics of the deceased farmers, and (iii) the suggestions on how the agrarian situation in Maharashtra can be improved. The findings of these studies reveal that farmers in Maharashtra commit suicide as a result of various reasons. The main causes mentioned are, amongst others, a transformation in India's economy followed by a decreasing importance of its agriculture as well as rising indebtedness, crop failure, and family responsibilities. Furthermore, it has been pointed out that these causal factors are interlinked and potentially aggravate each other. Looking at the characteristics of deceased farmers the literature review highlighted that mostly young, male farmers having only small landholdings without irrigation commit suicide. Additionally, also indebtedness and the cultivation of cash crops such as cotton and soybean have been identified as risk factors. Based on these findings, suggestions of the literature for future improvements in agriculture comprise a more timely governmental succor, a change in cropping patterns as well as remunerative prices for farm products.

The consideration of the methodological and thematic findings of this thesis in a wider theoretical context illustrated that the old debate between large-scale quantitative and smaller qualitative studies is still prevalent. The lack of individual aspects in statistical calculations of suicide rates, which has been emphasized already by Tarde (1903) and later by Douglas (1966, 1967), can be criticized even today and with focus on farmers' suicides in Maharashtra. In entire India, but also in Maharashtra, it can be argued that statistics on farmers' sui-



cides are socially constructed. This can be attributed to the fact that in order to be considered as a farmer's suicide, the deceased must have been male and in possession of land. Although the quantitative studies selected for analysis in this thesis performed their own data collection, they nevertheless try to fit individual suicide cases into predefined categories. By means of statistical computations, such studies construct a phenomenon which might also have other reasons which are hence neglected. Yet, it must be pointed out that, concordant with what Macdonald (2007) described, not only a statistical but also a case study fallacy could be observed. In spite of valuable additional information gathered by the few qualitative and hybrid studies investigated in this thesis, it must be emphasized that these findings could neither be validated nor generalized. This is due to the complexity and individuality of these findings which are difficult to summarize. Nevertheless, it must also be stressed that attempts have been made in qualitative and hybrid studies, but also in the methodology of this thesis, to count certain characteristics in order to make more general statements.

As a consequence of all these findings, this thesis proposes a mixed methods approach with an explanatory design. Such an approach integrates the advantages of quantitative and qualitative research methods by fostering qualitative studies. This is especially crucial since there is a lack of qualitative examinations regarding the phenomenon of farmers' suicides in the state of Maharashtra. These qualitative studies can then be used to validate and explain existing quantitative and statistical descriptions of the phenomenon. Finally, this thesis argues that such an approach will lead to a more detailed knowledge and understanding of farmers' suicides in Maharashtra. It might also be beneficial to include multiple scientific disciplines. In addition to that, future research should also consider the current decriminalization of attempted suicide and be more independent from any governmental request. Another suggestion of this thesis is to conduct more interviews with those who attempted suicide and not only with the relatives and families of deceased farmers.

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# APPENDIX

**Table A1: Overview – Studies analyzing Farmers' Suicides in Maharashtra, India.**

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Behere and Behere (2008)	Quantitative study: Psychological autopsy: 52 (closed and open-ended) questions Interviews with relatives of the deceased farmers Study period: Jan. 2005 to March 2006 (N = not mentioned) [Study conducted on request of Wardha district administration]	Farmers' suicides: Reasons	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Indebtedness + lack of credit availability: 95% of 3.4 million farmers in Vidarbha are indebted, Farmers are dependent on local moneylenders and high interest rates</li> <li>• Rising costs of cultivation</li> <li>• Declining prices of farm products + uncertainty of agriculture in future</li> <li>• Dependence on rainfall + relative absence of irrigation facilities</li> <li>• Repeated crop failure</li> <li>• Rural living + easy access to poisons</li> <li>• Lack of political engagement + absence of social support systems</li> </ul> <p>Conclusions</p> <ul style="list-style-type: none"> <li>• Suicides are the consequence of cumulative effects</li> <li>• Farmers are in severe distress: Suicide should not be seen only as mental health problem</li> <li>• Improvement of local infrastructure, introduction of new crop patterns and better credit delivery system are needed</li> <li>• Religious leaders are important in suicide prevention</li> </ul>
	Journal Article <i>Indian Journal of Psychiatry</i>	Wardha, Vidarbha, Maharashtra	
Bhatkule (2006)	Quantitative study: Analysis of case records derived from a medical college (N = 435)	Poisoning cases	<ul style="list-style-type: none"> <li>• Majority of patients came from rural areas (83%)</li> <li>• Almost all cases (93%) were suicidal in nature; 76% cases were cured</li> <li>• Poisoning mainly due to pesticides (mostly organophosphorus)</li> <li>• Almost 90% were laborers with low socio-economic status</li> <li>• Only 8.7% were agriculturists or farmers</li> <li>• Majority of cases were males (68%) in young age group (26-35 years) (54%)</li> <li>• Majority of suicides occurred between July-Sept. (29%)</li> </ul>
	Background Paper to Report by Mishra (2006c) <i>Indira Gandhi Institute of Development Research (IGIDR)</i>	Yavatmal, Vidarbha, Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Dandekar et al. (2006) <sup>2</sup>	Hybrid study: Detailed case studies (life history approach, questionnaires), Focus group discussions Statistics mentioned (N = 644, studied: 5% = 36)	Farmers' suicides: Reasons	Factors associated with farmers' suicides: <ul style="list-style-type: none"> <li>• Rising costs of cultivation: Agriculture and input costs have become more expensive (due to HYV seeds, fertilizers, etc.); costs do not match with crop yields and prices</li> <li>• Rising quantity of use of fertilizers since mid-1990s + declining productivity of land</li> <li>• Indebtedness (also landless farmers are affected) + absence of credit</li> <li>• Repeated crop failures (due to unseasonal rain, pest attacks)</li> <li>• Absence of irrigation + higher demand of water (due to HYV seeds)</li> <li>• Tendency towards commercial (cash) crops since late 1980s + increase in dependence on loans</li> <li>• Lack of information (e.g. on use of fertilizers, pesticides or seeds)</li> <li>• Lack of access to extension machinery provided by government</li> <li>• Declining opportunities in non-farm employment</li> </ul>
	Report submitted to Mumbai High Court <i>Tata Institute of Social Science (TISS)</i>	Kandesh, Nashik + Vidarbha + Marathwada, Maharashtra	
Deogirikar and Topare (2008) <sup>2</sup>	Quantitative study: Method not specified (kind of literature review)	Livelihood security and alternative sources	Factors associated with farmers' suicides: <ul style="list-style-type: none"> <li>• Declining agricultural productivity + declining contribution of agricultural sector to India's economy, with the share of population being dependent on agriculture remaining unchanged</li> <li>• Absence of non-farm employment</li> <li>• Dependence on credit</li> </ul> Consequences: <ul style="list-style-type: none"> <li>• Concentration of rural poverty in agricultural labor + increase in number of marginal farmers</li> <li>• Launch of employment guarantee scheme by government (Maharashtra was the first state in 1977) aimed at improving livelihood security</li> <li>• Employment scheme was more beneficial for rich population + number of registrations remained low</li> <li>• Other potential sources of livelihood: production of cashew (coastal areas), self-help groups, dairy farming, diversified crop pattern</li> </ul>
	Book chapter <i>Agrarian crisis, farmers' suicides and livelihood security of rural labour in India</i> (edited: Kanak K. Bagchi, published: Abhijeet Publications)	Maharashtra	
Deshmukh (2010) <sup>2</sup>	Quantitative study: Method not specified (kind of literature review)	(Cotton) farmers suicides in the context of liberalization, privatization and globalization	Factors associated with farmers' suicides (general): <ul style="list-style-type: none"> <li>• No single or particular reason</li> <li>• Crop failure + droughts</li> <li>• Indebtedness + exploitation by private moneylenders</li> <li>• Social and family causes (e.g. marriage of daughter or sister)</li> </ul>

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	Book chapter <i>Agrarian crisis and farmer suicides</i> (edited: R.S. Deshpande, published: SAGE)	Maharashtra	Situation of cotton farmers: <ul style="list-style-type: none"> <li>• Mostly in western part of Vidarbha (eastern part: less affected rice belt)</li> <li>• Cotton: once “white gold“, now challenged by liberalization, privatization, globalization</li> <li>• Competition: cheaper, higher quality cotton from Sudan, Egypt, Israel</li> <li>• Absence of subsidies + cultivation of cash crops for textile industry</li> <li>• Crop failure (due to untimely rains, pest attacks: American bollworm)</li> <li>• Dependence of private parties in selling crop yield</li> <li>• No beneficial impact of relief packages + only few farmers were eligible to benefit</li> <li>• Failure of Maharashtra’s Cotton Monopoly Procurement Scheme</li> <li>• Regional disparities: neglect of Vidarbha by governmental measures</li> <li>• Increasing divide between rich and poor</li> </ul>
Deshmukh, Gohad, and Werulkar (2010)	Quantitative study: List of 86 deceased farmers from 8 tahsils of Wardha who committed suicide during the year 2008 was obtained, Contact to families of deceased farmers, Statistical analysis (N = 86)	Farmers’ suicides: Reasons	Characteristics of the majority of deceased farmers: <ul style="list-style-type: none"> <li>• Young age</li> <li>• Small landholding + low annual income</li> <li>• Medium education</li> <li>• Having low irrigation potential</li> <li>• Almost half (46%) were drug addicts</li> <li>• 10% were mentally imbalanced</li> <li>• Indebtedness not identified as the major reason for farmers’ suicides</li> </ul>
	Journal Article <i>Indian Journal of Psychiatry</i>	Wardha, Vidarbha, Maharashtra	
Deshpande (2006) <sup>2</sup>	Quantitative study: Analysis based on views obtained from reports in Nagpur media over past 4 years More quantitative since focus not on individuals (N = not mentioned)	Farmers’ suicides: Reasons of agrarian crisis (Media perspective)	Factors associated with agrarian crisis: <ul style="list-style-type: none"> <li>• Poor productivity (due to lack of irrigation, declining soil fertility)</li> <li>• Lack of (governmental) support systems</li> <li>• Absence + inefficiency of farm credit and insurance schemes</li> <li>• Weak farmers’ movement</li> <li>• Lack of technological investment</li> </ul>

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	<i>Background Paper to Report by Mishra (2006c)</i> <i>Indira Gandhi Institute of Development Research (IGIDR)</i>	Vidarbha, Maharashtra	
Dongre and Deshmukh (2012)	Qualitative study: Research undertaken in 23 villages surrounding a primary health care center, Triangulation of free list and pile sorting exercise, Semi-structured focus group discussions, Findings presented to participants for validation (N = 17)	Farmers' suicides: Reasons	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Indebtedness + dependency on private moneylenders</li> <li>• Environmental problems + poor irrigation</li> <li>• Rising costs of cultivation + low prices for farm products</li> <li>• Use of chemical fertilizers</li> <li>• Crop failure</li> <li>• Addiction</li> <li>• Stress + family responsibilities</li> <li>• Lack of governmental succor</li> </ul> <p>Suggestions by interviewees:</p> <ul style="list-style-type: none"> <li>• Monitoring + support + counseling services for vulnerable farmers</li> <li>• Ensure self-reliance in modern farming techniques</li> <li>• Payment of relief packages on village level</li> <li>• Strengthening of National Mental Health Program (primary care level)</li> </ul>
	Journal article <i>Journal of Injury &amp; Violence Research</i>	Vidarbha, Maharashtra	
Gavhane, Ekale, and Sidam (2012) <sup>2</sup>	Qualitative study: 6 cases from each district were selected by random method of sampling who committed suicide in the study period (Jan. 2007 to Dec. 2007) and who had been declared as legal victims by district level committees Respondents were households of selected victims (N = 12)	Farmers' suicides: Reasons	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Indebtedness</li> <li>• Low productivity + crop failure</li> <li>• Low income + high expenditures</li> <li>• Increasing costs of cultivation</li> <li>• Inability to fulfill family responsibilities</li> </ul> <p>Suggestions by family members of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Remunerative prices for farm products</li> <li>• Waiving of old loans</li> <li>• Immediate governmental succor in case of natural hazards</li> <li>• Provision of irrigation facilities</li> <li>• Creation of additional, non-farm occupation</li> </ul>
	Journal article <i>Agriculture Update</i>	Parbhani + Beed, Marathwada, Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Guha (2012) <sup>2</sup>	Quantitative study: Methods not described in detail: based on primary sources (interviews) and secondary sources (journal articles, books on previously conducted studies)	Farmers' suicides: Reasons	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• International factors <ul style="list-style-type: none"> <li>• Negative effects of globalization, multi-national corporations</li> <li>• Declining investment in agriculture</li> <li>• Increasing trade + rising import</li> <li>• Production of cash crops for profit instead of self sufficiency</li> <li>• Replacement of organic seeds by cheaper hybrid and genetically modified seeds + monoculture of crops</li> <li>• Increasing costs of production</li> <li>• Indebtedness + privatization of seed sector</li> </ul> </li> <li>• National factors <ul style="list-style-type: none"> <li>• Insufficient government policies</li> <li>• Not every farmer is reached by governmental measures and compensation payments</li> </ul> </li> <li>• Local factors <ul style="list-style-type: none"> <li>• Crop failure (due to natural disasters, droughts, unseasonal rain)</li> <li>• Social issues (marriage of daughter, sister)</li> </ul> </li> </ul> <p>Suggestions by author:</p> <ul style="list-style-type: none"> <li>• Focus on organic farming techniques</li> <li>• Creation of insurance schemes</li> <li>• Creation of community groups for farmers</li> </ul>
	Thesis <i>Honors Scholar Theses (University of Connecticut)</i>	Maharashtra	
Kakde (2006)	Qualitative study: In-depth discussions with farmers, women who survived their husbands' suicides + groups working with non-irrigated farmers Focus on community perceptions & state of mental health services Study of cotton cultivation + field investigations in 2002-2003 + study in 2004 (N = not specified: 17 villages)	Farmers' suicides: (Non-irrigated) Cotton farmers, Community perception	<p>Factors associated with distress in community:</p> <ul style="list-style-type: none"> <li>• Micro level <ul style="list-style-type: none"> <li>• Natural adversities + threat of wild animals</li> <li>• High rate of interests + loans</li> <li>• Costs of seeds and fertilizers</li> <li>• Lack of advice and counseling</li> <li>• Neglect by government</li> <li>• Absence of support by community</li> </ul> </li> <li>• Cotton: new technologies, declining prices, import of and overdependence on cotton</li> </ul>

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	Book chapter <i>From debt trap to death trap. Victims of 'free' market – Enquiry into farmers' suicide</i> (edited: Max Martin and Seema Kakde, published: Vikas Adhyayan Kendra)	Wardha (17 villages) + Amravati (3) + Yeotmal (9) + Akola (3), Vidarbha, Maharashtra	<ul style="list-style-type: none"> <li>• Macro level <ul style="list-style-type: none"> <li>• Neglect by government</li> <li>• Dual-loan policy of banks</li> </ul> </li> </ul> <p>Factors associated with farmers' suicides (women's judgment):</p> <ul style="list-style-type: none"> <li>• Indebtedness + notice from bank (perceived as shameful)</li> <li>• Cost intensive farming</li> <li>• Inability to fulfill family responsibilities</li> </ul> <p>Factors associated with farmers' suicides (men's judgment):</p> <ul style="list-style-type: none"> <li>• Suicides cannot be explained by personal factors alone</li> <li>• Weak / emotional personality</li> <li>• Lack of support systems</li> <li>• Loss of land which implies loss of honor</li> <li>• Crop failure</li> <li>• Perceived failure (e.g. to fulfill family responsibilities)</li> <li>• Stress</li> <li>• Land ownership and caste (yet, no particular group can be identified as at risk group)</li> </ul> <p>Situation of women of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Feeling of being guilty</li> <li>• Coping strategies: Management of land, loan and household (often they need help and often situation is aggravated by further family problems)</li> </ul>
Kalamkar and Shroff (2011)	Quantitative study: Analysis based on: Primary data: collected from 120 households in Amravati, Buldhana, Yavatmal districts of Maharashtra using a specifically designed questionnaire, study period: June 2009 (reference year 2008-2009), Secondary data: statistical analysis of data collected from the Office of Director General (N = 120)	Farmers' suicides: Impact of rehabilitation package	<p>Aspects included in the government's rehabilitation package:</p> <ul style="list-style-type: none"> <li>• Coverage of credit through institutional credit sources</li> <li>• Debt relief: rescheduling of loans + interest waiver</li> <li>• Provision of irrigation facilities + watershed management</li> <li>• Seed replacement program + diversification of activities (e.g. livestock, horticulture, fisheries)</li> <li>• Extension support services</li> <li>• Additional income possibilities</li> </ul>



Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	Journal article <i>Economic and Political Weekly</i>	Amravati + Buldhana + Yavatmal, Vidarbha, Maharashtra	Impact of rehabilitation package: <ul style="list-style-type: none"> <li>• Farmers were aware of package and benefitted from measures (i.e. obtained fresh loans and supplemented their income) <ul style="list-style-type: none"> <li>• About 27% received assistance in obtaining benefits</li> </ul> </li> <li>• Increasing area under irrigation + significant increase in livestock</li> <li>• Seed replacement program was successful (mainly through soybean)</li> <li>• Overall farmers showed positive reactions and content in respect of the measures included in the package</li> <li>• Subsidy should be increased concerning drip irrigation, extension services and more milch animals</li> <li>• Influence of droughts is still huge</li> </ul>
Kale, Khonde, and Mankar (2014) <sup>2</sup>	Quantitative study: Total 200 victims were selected by random sampling covering 178 villages and 34 tahsils of 6 districts of Vidarbha, Study period: 1 Jan. to 31 Dec. 2006 Data collected by personal interviews (structured interview schedule) Rapid Rural Appraisal (RRA) technique: Time line study for historical perspectives, observations, discussions with family members and discussions with key informants reviewing victims' actual record of institutional debts (N = 200)	Farmers' suicides: Reasons	Factors associated with farmers' suicides: <ul style="list-style-type: none"> <li>• Low level of education</li> <li>• Low socio-economic status + low annual income</li> <li>• Indebtedness</li> <li>• Large to medium family size</li> <li>• Small / marginal rain-fed landholdings with no irrigation</li> <li>• Low productivity due to dependence on monsoon</li> <li>• Inability to fulfill family responsibilities (due to poverty, loans)</li> <li>• Alcohol addiction</li> <li>• Health problems (personal + of family members)</li> <li>• Disputes with others (family members, neighbors, etc.)</li> <li>• =&gt; Causes are interrelated, farming is considered as unremunerative</li> </ul> Characteristics of the majority of deceased farmers: <ul style="list-style-type: none"> <li>• 97% were male farmers + majority was head of family</li> <li>• Young and middle-aged farmers seem to be more prone (73%)</li> <li>• Main method: consumption of insecticides</li> <li>• Suicide rate declined with increasing experience in farming</li> </ul>
	Journal article <i>Karnataka Journal of Agricultural Sciences</i>	Akola + Amravati + Buldhana + Wardha + Washim + Yavatmal, Vidarbha, Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Kale, Mankar, and Wankhade (2014)	Quantitative study: From each district, 4 villages were selected randomly; from each village 5 small/marginal and 5 large/semi-medium farmers were selected and interviewed (structured interview schedule) Calculation of composite index of agrarian distress proneness (N = 240)	Agrarian distress proneness	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Unremunerative prices</li> <li>• Uncertainties due to weather + fluctuation in cost of inputs</li> <li>• Lack of irrigation + lack of accurate weather information</li> <li>• Crop damages (e.g. by wild animals)</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Almost all farmers showed high a level of agrarian distress</li> <li>• 38% farmers were in middle age group (36-50 years), 45% were older than 50 years</li> <li>• Majority (70%) had medium family size (4-6 members)</li> <li>• Majority (51%) had only farming as occupation</li> <li>• Most farmers had high school level education (40%)</li> <li>• Most farmers had well as irrigation, 43% had no source of irrigation</li> <li>• Only few supplemented crop farming by e.g. dairy farming (2%), most relied on crop farming exclusively</li> <li>• Most frequent crops: soybean (91%), pulses (89%), cotton (43%)</li> <li>• 71% have low level of information sources</li> </ul> <p>Suggestions by interviewees:</p> <ul style="list-style-type: none"> <li>• Remunerative prices for farm products (100%)</li> <li>• Subsidy for fences (due to wild animals) (95%)</li> <li>• Increase in electric supply</li> <li>• Access to information on government schemes (52%)</li> <li>• Assessment of crop insurance risk at village level (42%)</li> </ul>
	Journal article <i>Global Journal of Science Frontier Research: D. Agriculture and Veterinary</i>	Akola + Amravati + Buldhana + Wardha + Washim + Yavatmal, Vidarbha, Maharashtra	
Kale, Mankar, and Wankhade (2015)	Quantitative study: From each district, 10 families were selected randomly from 46 villages covering 9 tahsils who lost their family head during 2001-2011, Data collected by personal interview (structured interview schedule) (N = 60)	Farmers' suicides: Impact of rehabilitation package	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Erratic rainfall</li> <li>• Lack of remunerative prices for farm products</li> <li>• High price fluctuations</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Majority of farmers had small / medium family size</li> <li>• Majority of farmers relied on crop-to-crop farming (84%)</li> <li>• Half of all farmers were marginal and dry landholders with moderate fertile land</li> </ul>

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	Journal article <i>Karnataka Journal of Agricultural Sciences</i>	Akola + Amravati + Buldhana + Wardha + Washim + Yavatmal, Vidarbha, Maharashtra	<ul style="list-style-type: none"> <li>Over half of families (58%) benefitted from government relief package, e.g. milch animals, new well / water pumps / pipes               <ul style="list-style-type: none"> <li>Quality of measures was assessed as good</li> <li>37% families noted a change in livelihood sources due to package</li> </ul> </li> </ul>
Kulkarni and Deshpande (2006)	Quantitative study: Analysis of changing agrarian structure of 3 districts by incorporating some of the related variables like crops, irrigation, finance, fertilizers, etc., Data collected from government offices and reports, Study period: 1995-1996 to 2004-2005	Farmers' suicides: Agrarian situation, reasons	<ul style="list-style-type: none"> <li>Lack of irrigation in Vidarbha region               <ul style="list-style-type: none"> <li>Irrigated areas are largely under sugarcane</li> <li>Rain deficiency in 2004: exposure to yield risk</li> </ul> </li> <li>Cotton cultivation is becoming unremunerative               <ul style="list-style-type: none"> <li>Inputs costs do not match market prices</li> <li>Dependency on private moneylenders and traders (e.g. for seeds, fertilizers, pesticides)</li> </ul> </li> <li>Shift in cropping pattern from cereals &amp; cotton to pulses &amp; soybean</li> </ul>
	<i>Background Paper to Report by Mishra (2006c)</i> <i>Indira Gandhi Institute of Development Research (IGIDR)</i>	Yavatmal + Washim + Wardha, Vidarbha, Maharashtra	
Madare (2012) <sup>3</sup>	Quantitative study: Psychological autopsy: 52 (closed and open-ended) questions Interviews of relatives of the deceased farmers, Study period: May 2011 to Dec. 2011 (N = not mentioned)	Farmers' suicides: Policy implications	[Excluded in step 1 of analysis]
	Journal article <i>Golden Research Thoughts</i>	Yavatmal district, Vidarbha, Maharashtra	
Max and Kakde (2006) <sup>2</sup>	Quantitative study: Method not specified (kind of literature review)	Farmers' suicides: Cotton, indebtedness	<ul style="list-style-type: none"> <li>Until recently: neglect of farmers suicides in Vidarbha region by government of Maharashtra</li> <li>Since 1997: rise in suicide rates, peak in 2006</li> <li>Farmers' distress most significant in Vidarbha and in cotton cultivation               <ul style="list-style-type: none"> <li>Tendency to shift from cotton to soybean as alternative</li> </ul> </li> <li>90% of suicides are related to indebtedness</li> </ul>

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	Book chapter <i>From debt trap to death trap. Victims of 'free' market – Enquiry into farmers' suicide</i> (edited: Max Martin and Seema Kakde, published: Vikas Adhyayan Kendra)	Maharashtra	<ul style="list-style-type: none"> <li>• Situation today: <ul style="list-style-type: none"> <li>• Agricultural sector dominated by corporate and industrial logic, i.e.: Cancellation of subsidies, prevalence of new technologies, higher input prices, cheaper imports, focus on cash crops</li> <li>• Irrigation and access to markets as main drivers for change</li> </ul> </li> <li>• Economic reforms neglect of rural areas</li> <li>• Cotton cultivator faces distress in terms of: <ul style="list-style-type: none"> <li>• Rising input costs</li> <li>• Absence / scarcity of credits</li> <li>• Declining prices for cotton</li> </ul> </li> </ul>
Meeta and Rajivlochan (2006)	Hybrid study: Data offered by administration as a starting point (statistical profile), Detailed interviews with all families (questionnaire) + other villagers => case studies Additional basis: analysis + assessment of findings of existing studies of Yavatmal (e.g. Dandekar et al. 2006, Mishra 2006c)	Farmers' suicides: Situation assessment (Rural indebtedness, distress)	<p>Evaluation of existing studies (Mishra 2006c, Dandekar et al. 2006):</p> <ul style="list-style-type: none"> <li>• Objective: Explanation of social, economic causes of farmers' suicides <ul style="list-style-type: none"> <li>• Danger of neglecting intersubjective factors</li> </ul> </li> <li>• Conclusion: Suicides as resulting directly from stress caused by indebtedness <ul style="list-style-type: none"> <li>• Absence of holistic understanding of farmers' suicides</li> </ul> </li> </ul> <p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Indebtedness + harassment by moneylenders (only minor cause)</li> <li>• High costs for consumption needs + low income</li> <li>• Agrarian trouble (e.g. no non-farm employment opportunities)</li> <li>• Crop failure (especially among inexperienced farmers)</li> <li>• Social responsibilities (e.g. building house, marrying daughter) + need for additional credit</li> <li>• Chronic illness (farmer or family member) + large expenses on health care: seen as stress-generating</li> <li>• In 36% farmer had been chronic alcoholic</li> <li>• Absence of mental health professionals + counseling</li> <li>• Social humiliation</li> <li>• =&gt; Feeling of hopelessness + absence of advice are most common</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Rising suicide rate since 1990s (beginning of liberalization)</li> <li>• Rising costs of industrial inputs, decreasing price of agricultural products since 1990s</li> <li>• Majority of farmers in middle age group (30-40 years) (2001-2005)</li> <li>• Majority of farmers had taken institutional loans</li> </ul>
	Book <i>Farmers suicide: Facts and possible policy interventions</i> (published: Yashwantrao Chavan Academy of Development Administration)	Yavatmal, Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
			<ul style="list-style-type: none"> <li>• Half of farmers relied on informal sources of credit (e.g. moneylenders or relatives)</li> <li>• No particular correlation between landholding size or caste and suicides</li> </ul>
Mishra (2006a)	Quantitative study: Micro-level analysis: based on field survey of 111 suicide cases and 106 non-suicide control households spread across 105 villages Comparison by step-wise logistic regression Study period: 2004 and Jan. 2005 (N = 111)	Farmers' suicides	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Declining profitability of cotton grown on rain-fed basis (due to cheaper imports, failure of Monopoly Procurement Scheme, declining investment in agriculture, poor government extension services, etc.)</li> <li>• Dependency on input dealers + moneylenders</li> <li>• Uncertainties related to income + weather</li> <li>• Indebtedness (86%)</li> <li>• Fall in economic position (74%) + change in social status (36%)</li> <li>• Crop failure (40%)</li> <li>• Marriage of sister / daughter (34%)</li> <li>• Suicide in nearby village (32%) + suicide history in family (6%)</li> <li>• Addiction (28%)</li> <li>• Disputes with neighbors / others (26%)</li> <li>• Health problem (21%)</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Rising suicide rate since 1995</li> <li>• Majority (53%) were small / marginal farmers</li> <li>• Majority (58%) had long experience in farming ( more than 10 years)</li> <li>• 91% were males, 55% in middle age group (31-50 years), 80% were married</li> <li>• 79% consumed insecticides (share higher than in overall population)</li> <li>• =&gt; Outstanding debt was higher in suicide cases than in control group</li> </ul>
	Journal article <i>Economic and Political Weekly</i>	Amravati + Wardha + Washim + Yavatmal, Vidarbha, Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Mishra (2006c)	Quantitative study: Survey: Household interviews, focus group discussions, village level information (villages selected based on a list of reported suicide cases for 2004 and Jan. 2005) Household interview: 111 suicide case households spread across 105 villages + non-suicide control households (106) for comparison Visits of other suicide households/ villages: case studies + focus group discussions (9 villages) Statistical analysis: step-wise logistic regression (N = 111)	Farmers' suicides	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Yield and price shocks of cotton <ul style="list-style-type: none"> <li>• Aggravated due to large subsidy in US, import of cotton, failure of Monopoly Cotton Procurement Scheme</li> </ul> </li> <li>• Declining agricultural credit + breakdown of formal credit structures <ul style="list-style-type: none"> <li>• Consequence: dependence on informal sources + higher interests</li> </ul> </li> <li>• Higher input costs associated with cotton (e.g. seeds, pesticides, etc.)</li> <li>• Absence of irrigation</li> <li>• Cotton as only cash crop</li> <li>• 2004: Water stress due to rain deficiency</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Male SMR higher than all-India value (trebled from 1995 to 2004)</li> <li>• SMR highest in Amravati division</li> <li>• Pesticide consumption most common</li> <li>• 91% were males, 55% in middle age group (31-50 years), 80% were married with more than 10 years of experience in farming</li> <li>• Comparison with non-suicide controls: suicide cases had large family size and had higher debts</li> </ul>
	Report submitted to Government of Maharashtra <i>Indira Gandhi Institute of Development Research (IGIDR)</i>	Wardha + Washim + Yavatmal, Vidarbha, Maharashtra	
Mishra (2006d)	Quantitative study: 3 parts: Analysis of 192 news reports ( <i>De-shonnati</i> ), over one year (2004) (analysis of monthly patterns, ages of persons, method of suicide, causes / risk factors, etc.) Analysis of English, Marathi newspapers Definition of guidelines for suicide reporting	Farmers' suicides: Media reports	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Indebtedness as manifestation of economic downfall</li> <li>• Increasing prices</li> <li>• Decreasing profitability of cotton cultivation</li> <li>• Absence of state's succor in rural areas</li> <li>• Market-driven Bt cotton vs. cost-saving organic cotton</li> <li>• Since 1990s: Change in Monopoly Procurement Scheme</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• SMR highest in Amravati division</li> <li>• More than half (58%) suicide deaths during monsoon months (July-Sept.)</li> </ul>

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	<i>Background Paper to Report by Mishra (2006c) Indira Gandhi Institute of Development Research (IGIDR)</i>	Maharashtra	<ul style="list-style-type: none"> <li>Majority of farmers in middle age group (30-40 years) (84%)</li> <li>76% consumed pesticide</li> </ul> <p>Comparison of information sources:</p> <ul style="list-style-type: none"> <li>Media reports tend to sensationalize farmers' suicides + focus specifically on some aspects <ul style="list-style-type: none"> <li>Comparison with findings in survey by Mishra (2006d): over-reporting of loan amount</li> </ul> </li> <li>Governmental reports try to investigate whether a case is eligible for receiving compensation</li> </ul>
Mitra and Shroff (2007) <sup>2</sup>	Quantitative study: Method not specified (kind of literature review)	Farmers' suicides: Reasons	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>Mid-1990s: opening of India's agricultural economy + loss of competitiveness (especially in case of cotton) <ul style="list-style-type: none"> <li>Price risks: exposure to lower international prices</li> <li>Yield risks: lack of dynamism in cotton yield</li> <li>Increasing costs of cultivation (e.g. due to use of costly Bt cotton)</li> </ul> </li> </ul>
	Journal article <i>Economic and Political Weekly</i>	Maharashtra	
Mohanty (2004)	Hybrid study: Test relevance of "economic determinist" (common studies on farmers' suicides) and "social root hypotheses" (Durkheim) Classification of farmers: small, medium, large farmers (based on land ownership position) Information by family members of suicide victims Study period: suicide cases reported in 1998, fieldwork in 1999 (N = 66)	Farmers' suicides: Reasons	<p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>Majority (64%) were small farmers</li> <li>Income mainly due to business, trade</li> <li>Majority of farmers were cotton cultivators</li> <li>Mostly dependence on HYV crops (cotton, <i>jowar</i>) + higher usage of pesticides, fertilizers</li> <li>Crop failure: 93% were unable to recover</li> <li>Indebtedness: 69% took loans from banks, 77% from moneylenders</li> <li>=&gt; Accordance with Durkheim: suicide is rooted in social conditions</li> </ul>
	Paper presented at Department of Sociology, University of Pune <i>Gokhale Institute of Politics and Economics (GIPE)</i>	Amravati + Yavatmal, Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Mohanty (2005)	Hybrid study: (Quantitative data and case studies) Micro-level analysis: based on 66 reported cases of farmer suicide occurring in 2 districts during 1998; research itself conducted between Jan. to April 1999 Findings evaluated in relation to Durkheim's theory: suicide as a historically specific combination of social and economic causes (N = 66)	Farmers' suicides	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Indebtedness</li> <li>• Crop failure</li> <li>• Economic distress</li> <li>• Lack of information on methods of production (especially lower caste farmers)</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Majority (64%) were small farmers</li> <li>• Mostly dependence on HYV + higher production costs (due to technical inputs)</li> <li>• Majority (85%) of lower caste farmers had less than 10 years experience in farming</li> <li>• Low debt ratio in medium and large farmers</li> <li>• Additional causes of suicide in medium / large farmers: old age, illness</li> </ul>
	Journal article <i>The Journal of Peasant Studies</i>	Amravati + Yavatmal, Maharashtra	
Mohanty (2009) <sup>2,3</sup>	Quantitative study: Based on literature Analysis of regional disparity with reference to its agricultural sector	Regional disparities in agriculture	[Excluded in step 1 of analysis]
	Journal article <i>Economic and Political Weekly</i>	Konkan + Marathwada, Vidarbha, Maharashtra	
Mohanty and Shroff (2004)	Quantitative study: Understand suicides of farmers at macro and micro level: Macro level: Literature review Micro level: Selection of 10 suicide cases from 3 districts by random sampling method + equal number of control cases from same villages, division of farmers in large, medium and small farmers based on landholding Study period: 2001-2002	Farmers' suicides	<p>Factors associated with farmers' suicides:</p> <ul style="list-style-type: none"> <li>• Crop loss</li> <li>• Loss of income due to weather uncertainties</li> <li>• Indebtedness</li> <li>• Adoption of HYV seeds + greater investment in agriculture</li> <li>• Rising costs of cultivation (due to dependence on private traders)</li> <li>• Mainly attributable to social issues (e.g. family problems, illness, drinking, gambling)</li> </ul> <p>Characteristics of the majority of deceased farmers:</p> <ul style="list-style-type: none"> <li>• Cotton as predominant crop</li> <li>• Farmers were able to recover costs of cultivation</li> </ul>



Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
	Journal article <i>Economic and Political Weekly</i>	Amravati + Yavatmal + Wardha, Vidarbha, Maharashtra	<ul style="list-style-type: none"> <li>• Farmers (small, medium, large) had taken loans</li> <li>• Loans due to agricultural and social reasons</li> <li>• In some cases: inability to fulfill aspirations resulted in addition to alcohol</li> </ul>
Narayana-moorthy (2006) <sup>2</sup>	Quantitative study: Assessment of relief package for 6 districts in Vidarbha region Method not specified (kind of literature review)	Farmers' suicides: Impact of relief packages	<ul style="list-style-type: none"> <li>• Relief package does not address root causes of distress</li> <li>• No immediate help (except waiver of overdue interest) <ul style="list-style-type: none"> <li>• Instead, investment in irrigation (important, but not useful for immediate relief)</li> <li>• Better, more sustainable solution: investment in watershed program, livestock, fisheries</li> </ul> </li> <li>• Main problem: income from crop cultivation is insufficient even for consumption needs + agriculture is no longer profitable <ul style="list-style-type: none"> <li>• Need for remunerative prices</li> <li>• Improvement of rural infrastructure</li> </ul> </li> </ul>
	Journal article <i>Economic and Political Weekly</i>	Vidarbha, Maharashtra	
Narayana-moorthy and Kalamkar (2006) <sup>3</sup>	Quantitative study: Comparison between Bt and non-Bt cotton farmers: Study has been carried out mainly utilizing field survey data collected from 2 districts Two blocks from each district were selected: A total sample of 150 farmers: 100 Bt cotton growing and 50 non-Bt cotton growing farmers have been selected Study period: 2003 (N = 150)	Bt Cotton	[Excluded in step 1 of analysis]
	Journal article <i>Economic and Political Weekly</i>	Buldhana + Yavatmal, Vidarbha Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Ramchandani and Karmarkar (2014) <sup>2,3</sup>	Quantitative study: Covers National Agricultural Innovations Project (NAIP): subproject in 76 villages of 5 backward districts of M. Objective: develop holistic solution of methods, sustainability approach	Sustainable rural livelihood in backward districts of Maharashtra	[Excluded in step 1 of analysis]
	Journal article <i>Social and Behavioral Sciences</i>	Maharashtra	
Shah (2006)	Quantitative study: Kind of review of rural credit scenario	Rural credit delivery system	Factors associated with farmers' suicides: <ul style="list-style-type: none"> <li>• Rural credit delivery system: Overdue, non-performing assets of rural financial institutions</li> <li>• Lack of / declining loan advances for cotton</li> <li>• Vidarbha: lowest amount of credit flow through Primary Agricultural Cooperative Credit Societies</li> <li>• Neglect of rural credit delivery system by policies</li> <li>• Declining investment in agriculture</li> </ul>
	<i>Background Paper to Report by Mishra (2006c)</i> <i>Indira Gandhi Institute of Development Research (IGIDR)</i>	Maharashtra	
Shroff (2006) <sup>2</sup>	Quantitative study: Method not specified (kind of literature review)	Cotton Sector	Factors associated with farmers' suicides: <ul style="list-style-type: none"> <li>• Yield uncertainty (due to dependence on rain)</li> <li>• Lower yield than national average</li> <li>• High costs of cultivation</li> <li>• Lack of access to scientific farm techniques</li> <li>• Price fluctuations + inability of Maharashtra's State Cooperative Cotton Growers Marketing Federation to balance them</li> <li>• Unremunerative returns: in most cases, cotton is the primary cash crop + main source of income + large part is unirrigated</li> </ul>
	<i>Background Paper to Report by Mishra (2006c)</i> <i>Indira Gandhi Institute of Development Research (IGIDR)</i>	Maharashtra	
Tiware (2010) <sup>2,3</sup>	Quantitative study: Description of how government provides subsidies for liquor production from food grains Method not specified	Crisis, Food Grains & Liquor production	<ul style="list-style-type: none"> <li>• Neglect of main problem (agricultural distress, malnutrition) by government, instead focus on business interests</li> <li>• Grain liquor policy leads to food crisis and inflation + affects suicides</li> </ul>
	Journal article <i>Economic and Political Weekly</i>	Maharashtra	

Author (year)	Type of Study / Study Design	Study Objective	Main Findings <sup>1</sup>
	Type of Publication <i>Institution, Journal, Publisher</i>	District, Region, State	
Udmale et al. (2014) <sup>3</sup>	Quantitative study: Understand rural farming community's perception of drought impacts Study based on secondary and primary data (questionnaire survey of 223 farming households) Division of catchment area in three strata-areas depending on irrigation (low, medium, high irrigation) Statistical analysis of primary data using SPSS (N = 223)	Farmers Perception of Drought Impacts	[Excluded in step 1 of analysis]
	Journal article <i>International Journal of Disaster Risk Reduction</i>	Upper Bhima catchment, Maharashtra	

<sup>1</sup> Findings predominantly include the results of the study. In few cases in which the study contains important information in respect of farmers' suicides, the particular data is included here as well (provided that it contributes to the conclusions of the study).

<sup>2</sup> These studies were classified during the second, more careful reading since their methodology and focus could not be defined in the first step of analysis.

<sup>3</sup> These studies were excluded after the first reading due to only minor consideration of farmers' suicides (or in case of Madare (2012) due to partial plagiarism). Hence, no detailed information on their findings is presented.