Universiteit
Leiden
The Netherlands

Ubar Kampung: indigenous knowledge and practice of medicinal, aromatic and cosmetic (MAC) plants used for the treatment of diabetes mellitus in the Tatar Sunda Region of West Java, Indonesia

Febriyanti, R.M.

Citation

Febriyanti, R. M. (2021, November 16). *Ubar Kampung: indigenous knowledge and practice of medicinal, aromatic and cosmetic (MAC) plants used for the treatment of diabetes mellitus in the Tatar Sunda Region of West Java, Indonesia*. *Leiden Ethnosystems and Development Programme Studies*. Retrieved from https://hdl.handle.net/1887/3239334

Version:	Publisher's Version
License:	Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden
Downloaded from:	https://hdl.handle.net/1887/3239334

Note: To cite this publication please use the final published version (if applicable).

Ubar Kampung:
Indigenous Knowledge and Practice of Medicinal, Aromatic and Cosmetic (MAC) Plants Used for the Treatment of Diabetes Mellitus in the Tatar Sunda Region of West Java, Indonesia

Ubar Kampung:
Indigenous Knowledge and Practice of Medicinal, Aromatic and Cosmetic (MAC) Plants Used for the Treatment of Diabetes Mellitus in the Tatar Sunda Region of West Java, Indonesia

Proefschrift

ter verkrijging van
de graad van doctor aan de Universiteit Leiden,
op gezag van rector magnificus prof.dr.ir. H. Bijl,
volgens besluit van het college voor promoties
te verdedigen op dinsdag 16 november 2021
klokke 13.45 uur

door

Raden Maya Febriyanti
geboren te Bandung, Indonesie
in 1986

Promotor	: Prof.dr. H.P. Spaink
Co-Promotor	: Prof.dr.dr. (hc) L. J. Slikkerveer

Promotiecommisie

Leden	: Prof.dr. G.P. van Wezel (Voorzitter)
	: Prof.dr. E.F. Smets (Secretaris)
	: Prof.dr. B. Gravendeel
	: Prof.dr. K. Lestari (Universitas Padjadjaran, Bandung, Indonesië)
	: Dr. K. Saefullah (Universitas Padjadjaran, Bandung, Indonesië)

This study has been made possible thanks to the gracious support of Endowment Fund of Education (LPDP) Indonesia and the Leiden Ethnosystems and Development (LEAD) Programme of the Faculty of Science.

Ubar Kampung:

Indigenous Knowledge and Practice of Medicinal, Aromatic and Cosmetic (MAC) Plants Used for the Treatment of Diabetes Mellitus in the Tatar Sunda Region of West Java, Indonesia

Raden Maya Febriyanti

Leiden Ethnosystems and Development (LEAD) Programme Studies No. 13
Faculty of Science, Leiden University, The Netherlands.

ISBN : 978-94-6421-559-5
Cover Design : Photograph of Bapak I. Darsa, Village Elder of the Pangalengan District showing how medicinal plants are growing in the wild
Photograph : M. Febriyanti (2017)

Printed by : Ipskamp Printing, Enschede
Copyright © : Maya Febriyanti
With the exception of brief citation, no part of this book may be reproduced, transmitted or utilised in any form or by any means, electronic or mechanical, including photocopying and recording as well as any information storage system, without the written permission from the copyright owner.

This dissertation is dedicated to my parents Usman Sofyan and Titing Sulastini, my husband Aalbrecht Alby Irawan, and my children Ahmad Azzam Irawan and Archibald Alyanda Irawan.

Acknowledgements

This dissertation is the result of my most interesting academic exploration in the field of ethnopharmacology in Indonesia, focused on the fascinating study of the local people's knowledge and use of Medicinal, Aromatic and Cosmetic (MAC) plants of the Sunda Region for the treatment of diabetes mellitus, to which a large number of individuals has contributed, including the people from the Tatar Sunda Region of West Java, Indonesia, my Supervisors, the Members of the PhD Committee and my Colleagues from the LEAD Programme. While their contribution in many aspects is invaluable to my research, I am following the *mores* of Leiden University to express here my sincere acknowledgements of their support.

Contents

Acknowledgements xi
Contents xiii
List of Tables xvi
List of Figures xviii
List of Illustrations xviii
List of Maps xviii
List of Abbreviations xix

CHAPTER I INTRODUCTION 1
1.1 Diabetes Mellitus as a Public Health Problem 4
1.1.1 Diabetes Mellitus: Overview 4
1.1.2 Diabetes Mellitus: Global and National Burden 5
1.1.3 Challenges in the Treatment of Diabetes Mellitus in Developing Countries 6
1.2 Health Care Utilisation in the Medical Pluralism Paradigm 8
1.2.1 Medical Pluralism in Indonesia 8
1.2.2 Determinants in Health Care Utilisation Behaviour for Treatment of Diabetes Mellitus 9
1.3 Indigenous Knowledge and Practice of MAC Plants 11
1.3.1 The Role of Ethnomedicine in the Treatment of T2DM 12
1.3.2 *Ubar Kampung*: Indigenous Knowledge of MAC plants in Tatar Sunda, West Java 14
1.4 The Need for Integrating the Traditional Medical System 15
1.5 General Aim and Specific Objectives 16
1.6 Structure of the Study 17

CHAPTER II THEORETICAL ORIENTATION 19
2.1 Health and Illness Behaviour and the Health-Seeking Process **19**
2.1.1 Typologies of Medical Systems 21
2.1.2 The Study of Health Seeking Behaviour 21
2.2 Conceptual Framework of Medical Pluralism 22
2.2.1 Traditional Medical System (TM) 24
2.2.2 Transitional Medical System (TRM) 26
2.2.3 Modern Medical System (MM) 29
2.3 Studies in Patterns of Utilisation in Diabetes Treatment 29
2.3.1 Pathology and Treatment of Diabetes Mellitus 29
2.3.2 Health Care Utilisation in the Treatment of Diabetes Mellitus 32
2.3.3 Transcultural Perspective on Health Care Utilisation 32
2.4 Indigenous Knowledge System and Ethnosystems' Approach 33
2.4.1 The Field of Ethnoscience: Ethnobotany and Ethnomedicine 34
2.4.2 Medicinal, Aromatic, and Cosmetic (MAC) Plants for Diabetes Mellitus 36

CHAPTER III RESEARCH METHODOLOGY 39
3.1 Selected Research Methodology 39
3.1.1 The 'Leiden Ethnosystems' Approach' 39
3.1.2 The Multivariate Model of Transcultural Health Care Utilisation 40
3.1.3 Operationalisation of the Conceptual Model 41
3.2 Selection of the Research Area, Sample, and Household Surveys 51
3.2.1 Selection of the Research Area 51
3.2.2 Selection of the Samples 53

3.2.3 Development of the Household Surveys 54
3.3 Data Collection 54
3.3.1 Quantitative Study 54
3.3.2 Qualitative Study 55
3.4 Data Analysis 56
3.5 Ethnobotanical Survey 58

CHAPTER IV RESEARCH SETTING: INDONESIA AND THE TATAR SUNDA REGION IN WEST JAVA 59
4.1 Indonesia: Recent Developments and the National Health Care System 59
4.1.1 Recent Developments 59
4.1.2 The Development of National Health System in Indonesia 61
4.2 Kabupaten Bandung as Part of the Tatar Sunda Region 64
4.2.1 Historical Background of Tatar Sunda and the Sunda Kingdom 64
4.2.2 The Sundanese People: Cultures and Communities 65
4.2.3 Kabupaten Bandung as part of the Tatar Sunda Region 71
4.3 Research Communities 72
4.3.1 Natural Environment 72
4.3.2 Characterisations of Local Populations 75
4.3.3 Patterns of Migration and Settlement 80

CHAPTER V PLURAL MEDICAL SYSTEM IN WEST JAVA 85
5.1 The Traditional Medical System 86
5.1.1 Accessibility on Traditional Medical System 86
5.1.2 Knowledge, Beliefs, and Practice on the Traditional Medical System 87
5.1.3 MAC Plants Used by Sundanese Community in the Research Area 90
5.1.4 Traditional Healing Practices in the Sundanese Community 91
5.2 The Transitional Medical System 92
5.2.1 Accessibility of Transitional Medical System 93
5.2.2 Knowledge and Opinions on the Transitional Medical System 93
5.3 The Modern Medical System 96
5.3.1 Accessibility of Modern Medicine 98
5.3.2 Knowledge, Belief and Practice on the Modern Medical System 102

CHAPTER VI QUALITATIVE STUDY ON *UBAR KAMPUNG* FOR THE TREATMENT OF DIABETES MELLITUS 105
6.1 The Significance of Ethnomedicine for the Treatment of Diabetes Mellitus 105
6.2 The Importance of Indigenous Medical Knowledge on MAC Plants 106
6.3 *Ubar kampung* for the Treatment of Diabetes Mellitus 107

CHAPTER VII TRANSCULTURAL HEALTH CARE UTILISATION IN KABUPATEN BANDUNG 119
7.1 Concepts of Health and Illness among the Sundanese Community 119
7.2 Reported Diseases in the Research Area 124
7.3 Patterns of Health Care Utilisation 126
7.3.1 Transcultural Health Care Utilisation for General Disease 126
7.3.2 Transcultural Health Care Utilisation for Diabetes Mellitus 132

CHAPTER VIII PATTERNS OF TRANSCULTURAL HEALTH CARE UTILISATION IN THE RESEARCH AREA 139
8.1 Preparation of the Data Set 139
8.1.1 Factors and Variables 139
8.1.2 Construction of the Data Set 141
8.2 Quantitative Data Analysis 142
8.2.1 Bivariate Analysis of the Selected Variables 142
8.2.2 Mutual Relation Analysis of the Selected Variables 158
8.2.3 Nonlinear Canonical Correlation Analysis: OVERALS 159
8.2.4 Multiple Regression Analysis 164
8.3 Results of the Analysis and Interpretation of the Findings 167

CHAPTER IX CONCLUSIONS AND RESEARCH IMPLICATIONS 173
9.1 Conclusions 173
9.2 Implications of the Research 180
9.2.1 Theoretical Implications 180
9.2.2 Methodological Implications 181
9.2.3 Practical Implications 182

Bibliography 185
Summary 209
Samenvatting 215
Appendix 221
Curriculum Vitae 223

List of Tables

Table 2.1	Drugs Discovered Based on Ethnomedicine	36
Table 3.1	Block 1 Independent Predisposing Factors: Socio-Demographic Factors	43
Table 3.2	Independent Predisposing Factors: Psycho-Social Factors	44
Table 3.3	Independent Enabling Factors	46
Table 3.4	Independent Perceived Morbidity Factors	47
Table 3.5	Independent Institutional Factors	48
Table 3.6	Independent Environmental Factors	49
Table 3.7	Intervening Factors	50
Table 3.8	Dependent Health Care Utilisation Factors	51
Table 3.9	Characteristics of the Selected Research Area	52
Table 3.10	List of Villages Selected for the Household Survey	53
Table 4.1	Overview of the Five Sample Villages in Kabupaten Bandung	72
Table 4.2	Distribution of Gender in the Household Members of the Sample in the Research Villages (N=833)	75
Table 4.3	Distribution of the Age of the Household Members of the Sample in the Research Villages (N=833)	76
Table 4.4	Distribution of the Number of the Household Members of the Sample in the Research Villages (N=209)	77
Table 4.5	Distribution of the Marital Status of the Household Members of the Sample in the Research Villages (N=833)	78
Table 4.6	Distribution of the Relationship with the Household Head of the Sample in the Research Villages (N=833)	78
Table 4.7	Distribution of the Completed Education of the Household Members of the Sample in the Research Villages (N=833)	80
Table 4.8	Distribution of the Place of Birth of the Household Members of the Sample in the Research Villages (N=833)	81
Table 4.9	Distribution of the Residential Status of the Household Members of the Sample in the Research Villages (N=833)	81
Table 4.10	Distribution of the Ethnicity of the Household Members of the Sample in the Research Villages (N=833)	82
Table 4.11	Distribution of the Socioeconomic Status of the Households of the Sample in the Research Villages (N=209)	82
Table 4.12	Distribution of the Occupation of the Household Members of the Sample in the Research Villages (N=833)	83
Table 5.1	Accessibility of Traditional Medical System	87
Table 5.2	Knowledge of Traditional Medicine of Patients (N = 360)	87
Table 5.3	Belief in Traditional Medicine (N = 360)	88
Table 5.4	Opinion on Traditional Medicine (N = 360)	89
Table 5.5	Herbal Preparations by Patients in the Research Area (N=156)	90
Table 5.6	Accessibility of Transitional Medicine of Patients (N = 360)	93
Table 5.7	Knowledge on Transitional Medicine of Patients (N = 360)	94
Table 5.8	Opinion on Transitional Medicine of Patients (N = 360)	94
Table 5.9	Health Care Facilities in Kabupaten Bandung.	97
Table 5.10	Number of Health Care Professionals at the Puskesmas in the Research Area	98
Table 5.11	Access to the Modern Health Care Facility (N = 360)	99
Table 5.12	Community Health Services in the Research Area and Kabupaten Bandung	101

Table 5.13	Knowledge on Modern Medicine (N = 360)	102
Table 5.14	Opinion on Modern Medicine (N = 360)	103
Table 5.15	Distribution of Health Insurance Participation in the Research Villages (N = 360)	103
Table 6.1	List of Key Informants from Five Traditional Villages	109
Table 6.2	List of Names of the 20 Most Frequently Reported MAC Plants for Diabetes Mellitus	110
Table 6.3	Medicinal Plants Used for the Treatment of Diabetes Mellitus, Parts Used and Method of Preparation	113
Table 6.4	List of Herbal-based Antidiabetics Available in the Market	118
Table 7.1	Perceived Activities Related to Disease Prevention (N=360)	120
Table 7.2	Perceived Symptoms of the Illness in the Research Villages (N=360)	122
Table 7.3	Perceived Cause of the Disease (N=360)	123
Table 7.4	Number of Cases of the 10 Most Common Diseases in Bandung Regency	124
Table 7.5	Distribution of Disease in the Each Village (N=360)	125
Table 7.6	Rates of the Household Members' Utilisation of the Plural Medical System (N=611)	127
Table 7.7	Frequency of the Utilisation of the Plural Medical System by the Household Members (N=611)	129
Table 7.8	Distribution of the Utilisation of the Plural Medical System of all Patients in the Sample over the Two Research Communities (N=611)	130
Table 7.9	Perceived Symptoms of Diabetes Mellitus (N=212)	132
Table 7.10	Perceived Causes of Diabetes Mellitus (N=212)	133
Table 7.11	Individual Prone to Diabetes Mellitus (N=212)	135
Table 7.12	Rates of the Utilisation of the Plural Medical System among Diabetes Patients (N=388)	137
Table 8.1	Block of Factors, Names and Labels of All 52 Variables Identified within the Multivariate Model of Transcultural Health Care Utilization	139
Table 8.2	Distribution of the Socio-Demographic Variables of the Respondents of the Sample over the Dependent Variables (N=611)	143
Table 8.3	Distribution of the Psycho-social Variables of the Respondents of the Sample over the Dependent Variables (N=611)	146
Table 8.4	Distribution of the Enabling Variables of the Respondents of the Sample over the Dependent Variables (N=611)	150
Table 8.5	Distribution of the Perceived Morbidity Variables of the Respondents of the Sample over the Dependent Variables (N=611)	151
Table 8.6	Distribution of the Institutional Variables of the Respondents of the Sample over the Dependent Variables (N=611)	152
Table 8.7	Distribution of the Environmental Variables of the Respondents of the Sample over the Dependent Variables (N=611)	154
Table 8.8	Distribution of the Intervening Variables of the Respondents of the Sample over the Dependent Variables (N=611)	155
Table 8.9	List of the Selected Significant Variables based on Blocks of Determinant Variables	158
Table 8.10	Component Loadings of the Two Sets of Variables with a Total of 32 Variables on Two Dimensions (N=611)	162
Table 8.11	List of Multiple Correlation Coefficients (p) Calculated by Means of a Multiple Regression Analysis of the Nine Blocks of Factors on Two Dimensions (N=611)	164

List of Figures

Number	Titles	Page
Figure 2.1	The Community Civic Partnership Model for the Prevention of T2DM	31
Figure 3.1	Conceptual Model of Transcultural Health Care Utilisation	41
Figure 3.2	Administrative Structure of the Selected Research Area	52
Figure 4.1	Government Organization, Decentralisation, and Health System	62
Figure 4.2	Frequency of the Age of the Household Members Divided by the Gender (N=833)	77
Figure 7.1.	Patterns of Transcultural Health Care Utilisation (N=611)	128
Figure 7.2	Pattern of Transcultural Health Care Utilisation among Diabetes Patients (N=388)	160
Figure 8.1	Model of the Mutual Relation Analysis of the Blocks and Variables	160
Figure 8.2	Plot of the Component Loading Analysis (OVERALS) of the Transcultural Health Care Utilisation in Kabupaten Bandung	163
Figure 8.3	Final Model of Transcultural Health Care Utilisation indicating the Strength of the Correlations between the Blocks of Variables	169

List of Illustrations

Number	Titles	Page
Illustration 4.1	Candi Cangkuang	66
Illustration 4.2	Traditional Sundanese House in *Kampung Adat Pulo* (Traditional Village)	68
Illustration 4.3	The Women in Traditional Village are *Gotong Royong* Preparing Dishes for Celebration of the Birth of Prophet Muhammad (*Maulid Nabi*)	69
Illustration 4.4	Sundanese Traditional Kitchen	70
Illustration 4.5	*Bandrek* and *Bajigur*, Sundanese Traditional Drinks, Prepared from Medicinal, Aromatic, and Cosmetic Plants	70
Illustration 4.6	Traditional House in Cikondang Traditional Village	73
Illustration 4.7	Roads in Kecamatan Katapang were Blocked by Flood	74
Illustration 4.8	Sub-district Office in Kecamatan Cilengkrang	74
Illustration 4.9	Village of Cipanjalu, one of the research villages in Kecamatan Cilengkrang	75
Illustration 4.10	*Warung* in the Respondent's House	83
Illustration 5.1	MAC Plants in the Terrace of the House	91
Illustration 5.2	Script of Sundanese Medicines	91
Illustration 5.3	Facilities in the Puskesmas Katapang	100
Illustration 5.4	Posbindu at Cipanjalu Village	101
Illustration 5.5	Health Information Poster in the Research Area	102
Illustration 6.1	Elder in Lamajang Village Shows Several Medicinal Plants	108
Illustration 6.2	The Most Frequently Used MAC Plants for Diabetes Mellitus	112
Illustration 6.3	Example of Commercial Herbal Medicine as an Antidiabetic	118

List of Maps

Number	Titles	Page
Map 4.1	Map of Indonesia	60
Map 4.2	Map of Kabupaten Bandung with the Indication of Location of Three Sample Districts	71

List of Abbreviations

ADA	: American Diabetes Association
BPJS-K	: *Badan Penyelenggara Jaminan Sosial-Kesehatan*
BPOM	: *Badan Pengawas Obat dan Makanan*
BPS	: *Badan Pusat Statistik*
CAM	: Complementary Alternative Medicine
CVD	: Cardiovascular Disease
DHO	: District Health Officer
DM	: Diabetes Mellitus
DPP	: Diabetes Prevention Program
FES	: Field of Ethnological Study
HD	: Historical Dimension
ICMD	: Integrated Community Managed Development
IDF	: International Diabetes Foundation
IKS	: Indigenous Knowledge System
JKN	: *Jaminan Kesehatan Nasional*
LEAD	: Leiden Ethnosystem and Development
LMICs	: Low- and Middle-Income Countries
MAC	: Medicinal Aromatic and Cosmetic
MM	: Modern Medicine
NADFC	: National Agency of Drugs and Food Control
NCD	: Non-communicable Disease
NHIS	: National Health Insurance System
PHC	: Primary Health Care
PHO	: Provincial Health Officer
Poskesdes	: *Pos Kesehatan Desa*
Pusbindu	: *Pusat Binaan Terpadu*
Puskesmas	: *Pusat kesehatan masyarakat*
PV	: Participant's View
SDG	: Sustainable Development Goals
SES	: Socio-economic Status
SPSS	: Statistical Package for Social Science
T2DM	: Type 2 Diabetes Mellitus
TEK	: Traditional Ecological Knowledge
TM	: Traditional Medicine
TOGA	: *Tanaman Obat Keluarga*
UN	: United Nations
WHO	: World Health Organisation