



**EFFECT OF PROTEAN CAREER ATTITUDE ON THE RELATIONSHIP
BETWEEN PSYCHO-SOCIAL FACTORS AND CAREER CHOICES
AMONG MEDICAL STUDENTS IN PUBLIC UNIVERSITIES IN
MALAYSIA**

By

CHITRA DEVI A/P AINER

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
In Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

November 2024

FPP 2024 31

All materials contained within this thesis, including without limitation of text, logos, icons, photographs, and all other artwork, is copyright material of University Putra Malaysia unless otherwise stated. Use may be made of material contained within the non-commercial thesis purposes from the copyright holder. Commercial use of the material may only be made with the express, prior, written permission of University Putra Malaysia.

Copyright © University Putra Malaysia



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment
of the requirement for the degree of Doctor of Philosophy

**EFFECT OF PROTEAN CAREER ATTITUDE ON THE RELATIONSHIP
BETWEEN PSYCHO-SOCIAL FACTORS AND CAREER CHOICES
AMONG MEDICAL STUDENTS IN PUBLIC UNIVERSITIES IN
MALAYSIA**

By

CHITRA DEVI A/P AINER

November 2024

Chair : Siti Raba'ah binti Hamzah, PhD
Faculty : Educational Studies

Protean career attitude (PCA) plays a significant role in career management, yet its mediating role remains underexplored, particularly in Malaysia. Existing studies primarily examine PCA as an independent variable, focusing on relationships with outcomes such as career success, organizational commitment, employability, HRD practices, career mobility, and career strategies. Local research has largely addressed topics like career advancement, career success, job insecurity, and career goals, leaving a gap in understanding PCA's influence on career-related outcomes. Globally, studies on job-related outcomes, such as career success, work orientation, motivators, and work-life balance, remain limited, especially in the context of flexible career perspectives. Research into the interplay between contextual and individual factors influencing PCA is also insufficient. Studies have not fully examined how variables such as attitudes, time management, and work-life balance interact with PCA to influence career choices.

Addressing this gap, this study utilizes social cognitive career theory and life-span, life-space theory to investigate how individual factors contribute to career choices among medical students in public universities. This research focuses on understanding the relationships between attitudes, time management, work-life balance, PCA, and career choices. It seeks to determine the extent of these factors' influence, identify the most significant predictor, and assess PCA's mediating role. By doing so, the study aims to validate internal and external factors linking PCA with career choices, addressing a critical gap in the career management literature. The target population includes medical students across all academic years in public universities. Using a descriptive and correlational quantitative research design, data were collected through structured questionnaires employing nominal, ordinal, interval, and ratio scales. The data were analyzed using *SPSS Version 26*, with bootstrapping techniques applied to evaluate PCA's mediating effects.

This study significantly contributes to the understanding of career choices among medical students by identifying reliable predictors and employing robust theoretical frameworks. The findings provide valuable insights into individual decision-making processes and practical guidance for organizational practices, government policies, and theoretical advancements. By developing a comprehensive research framework, the study enhances both academic and practical perspectives in career management, filling an important gap in the understanding of PCA's role in shaping career outcomes.

Keyword: Protean career attitude, career choices, attitude, time management, work-life-balance

SDG: GOAL 4: Quality Education

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KESAN SIKAP KERJAYA PROTEAN TERHADAP HUBUNGAN ANTARA
FAKTOR PSIKO-SOSIAL DAN PILIHAN KERJAYA DI KALANGAN
PELAJAR PERUBATAN DI UNIVERSITI AWAM DI MALAYSIA**

Oleh

CHITRA DEVI A/P AINER

November 2024

Pengerusi : Siti Raba'ah binti Hamzah, PhD
Fakulti : Pengajian Pendidikan

Sikap kerjaya protean (PCA) memainkan peranan penting dalam pengurusan kerjaya, namun peranannya sebagai pengantara masih kurang diterokai, terutamanya di Malaysia. Kajian yang sedia ada telah mengkaji PCA sebagai pembolehubah bebas, memfokuskan pada hubungan dengan kejayaan kerjaya, komitmen organisasi, kebolehpasaran, amalan pembangunan sumber manusia (PSM), mobiliti kerjaya dan strategi kerjaya. Di peringkat tempatan dan global, kajian berkaitan pekerjaan dan hasil, seperti kejayaan kerjaya, orientasi kerja, motivator, dan keseimbangan kehidupan kerja, kekal terhad, terutamanya dalam konteks perspektif kerjaya yang fleksibel.

Penyelidikan ke atas interaksi antara faktor kontekstual dengan individu yang mempengaruhi PCA juga tidak mencukupi. Kajian belum dijalankan sepenuhnya bagaimana pembolehubah seperti sikap, pengurusan masa dan keseimbangan kehidupan kerja berinteraksi dengan PCA untuk mempengaruhi pilihan kerjaya.

Menangani jurang ini, kajian ini menggunakan teori kerjaya kognitif sosial, teori jangka hayat dan teori ruang hidup untuk meneliti bagaimana faktor individu menyumbang kepada pemilihan kerjaya dalam kalangan pelajar perubatan di universiti awam. Penyelidikan ini memberi tumpuan kepada memahami hubungan antara sikap, pengurusan masa, keseimbangan kerja kehidupan, PCA, dan pilihan kerjaya. Ia bertujuan untuk menentukan sejauh mana pengaruh faktor ini, mengenal pasti peramal yang paling signifikan, dan menilai peranan pengantara PCA.

Oleh yang demikian, kajian ini bertujuan untuk mengesahkan faktor dalaman dan luaran yang menghubungkan PCA dengan pilihan kerjaya dan menangani jurang kritikal dalam literatur bagi pengurusan kerjaya. Populasi kajian adalah pelajar perubatan merentas semua tahun akademik di universiti awam. Kajian ini menggunakan reka bentuk penyelidikan kuantitatif deskriptif dan korelasi, data dikumpul melalui soal selidik berstruktur yang menggunakan skala nominal, ordinal, selang dan nisbah. Data dianalisis menggunakan *SPSS Versi 26*, dengan teknik *bootstrap* untuk menilai kesan pengantara PCA. Kajian ini secara signifikan menyumbang kepada pemahaman tentang pilihan kerjaya dalam kalangan pelajar perubatan dengan mengenal pasti peramal yang boleh dipercayai dan menggunakan rangka kerja teori yang mantap. Hasil kajian sangat berharga dalam menyumbang kepada proses membuat keputusan individu dan panduan yang praktikal untuk amalan organisasi, dasar kerajaan dan kemajuan teori. Dengan membangunkan rangka kerja penyelidikan yang komprehensif, kajian ini meningkatkan kedua-dua perspektif akademik dan praktikal dalam pengurusan kerjaya, mengisi jurang penting dalam pemahaman peranan PCA dalam membentuk hasil kerjaya.

Kata Kunci: sikap kerjaya protean, sikap, keseimbangan kehidupan kerja, pengurusan masa, pilihan kerjaya

SDG: MATLAMAT 4: Kualiti Pendidikan



ACKNOWLEDGEMENTS

First and foremost, I bow to the divine Goddess Durga, the embodiment of strength, courage, and compassion. Her blessings have been my source of strength and guidance throughout this journey, empowering me to overcome challenges and persevere with faith and determination.

To my parents, Mr. Ainer Chintamany and Mrs. Krishnamah Yellen, no words can truly express the depth of my gratitude. Your sacrifices, unconditional love, and steadfast faith in me have been the foundation of all my achievements. You taught me the values of resilience, hard work, and humility, and for that, I will always be indebted to you.

I extend my deepest and most heartfelt gratitude to my supervisor, Assoc. Prof. Dr. Siti Ra'baah Hamzah, whose unwavering belief in my potential and thoughtful guidance have illuminated my path throughout this journey. Her profound wisdom, boundless patience, and encouragement have been the cornerstone of my academic and personal development. She has not only shaped this dissertation with her meticulous insights and constructive feedback but also instilled in me a deeper understanding of resilience, discipline, and intellectual curiosity.

To my husband, Mr. Udaya Kumaran Ganesan, thank you for standing beside me as my rock. Your patience, love, and support have been my strength, lifting me up during moments of doubt and helping me believe in myself. You have been my safe harbor in this stormy journey, and I could not have done this without you.

To my precious children, Aadithiya, Harradanaa, and Raghava, you are my greatest joys and my constant motivation. Your love and laughter have been a reminder of what truly matters, and this accomplishment is dedicated to you. Thank you for your patience and understanding when I had to sacrifice time with you to pursue this dream.

To my beloved sisters, Sumitradevi, Dr. Indumathi, and Jamuna, your encouragement, love, and belief in me have been a source of strength and comfort throughout this journey. Your support has meant more to me than words can convey.

To all of you, my family and guide, this work is as much yours as it is mine. Thank you for walking this path with me, for believing in me, and for being my unwavering support system. I am truly blessed to have each of you in my life.

This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of PhD by Industry. The members of the Supervisory Committee were as follows:

Siti Ra'baah binti Hamzah, PhD.

Associate Professor
Faculty of Educational Studies
Universiti Putra Malaysia
(Chairman)

Shamsul Bahri bin Hj. Md Tamrin, PhD

Professor
Faculty of Medicine and Health Sciences
Universiti Putra Malaysia
(Member)

Mohd Faiq bin Abd Aziz, PhD

Senior Lecturer
Faculty of Educational Studies
Universiti Putra Malaysia
(Member)

ZALILAH MOHD SHARIFF, PhD.

Professor and Dean
School of Graduate Studies
Universiti Putra Malaysia

Date: 8th May 2025

TABLE OF CONTENTS

ABSTRACT	Page
ABSTRAK	i
ACKNOWLEDGEMENTS	iii
APPROVAL	vi
DECLARATION BY THE GRADUATE STUDENT	viii
DECLARATION BY MEMBERS OF SUPERVISORY	ix
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ABBREVIATIONS	xii
	xiii

CHAPTERS

1	INTRODUCTION	1
	1.1 Introduction	1
	1.1 Background of the Study	1
	1.2 Overview of Career Choices on the Medical Sector in Malaysia	9
	1.3 Attitude of Medical Students on Career Choices	13
	1.4 Time Management of Medical Students on Career Choices	14
	1.5 Work-life Balance of Medical Students on Career Choices	16
	1.6 Protean Career Attitude (PCA) as Mediating Factors	18
	1.7 Career Choices Among the Medical Students	21
	1.8 Statement of Problem	24
	1.9 Research Questions	33
	1.10 Objectives of Study	33
	1.10.1 General Objective	33
	1.10.2 Specific Objective	34
	1.11 Significance of the Study	34
	1.12 Scopes of the Study	37
	1.13 Limitation of the Study	37
	1.14 Conceptual and Operational Definition	38
	1.15 The Organization of the Thesis	40
	1.16 Chapter Summary	41
2	LITERATURE REVIEW	42
	2.1 Introduction	42
	2.2 Theoretical Background	42
	2.2.1 Social Cognitive Career Theory	43
	2.2.2 Life-span, Life-space Theory	44
	2.3 Theory Framework of the Study	48
	2.4 Past Research Review	51
	2.4.1 Attitude, Time Management and Work-Life Balance	51

2.4.1.1	Attitude (AT)	54
2.4.1.2	Time Management (TM)	58
2.4.1.3	Work-life Balance (WLB)	62
2.4.1.4	Career Choices (CC)	67
2.4.1.5	Protean Career Attitude as Mediator	74
2.5	Summary of Hypotheses	81
2.6	Chapter Summary	83
3	RESEARCH METHODOLOGY	84
3.1	Introduction	84
3.2	Research Design	84
3.3	The Research Framework	86
3.4	Population and Sample	87
3.5	Sampling Design	87
3.5.1	Unit Analysis	87
3.5.2	Sampling Technique & Recruitment	88
3.5.3	Sampling Technique	90
3.5.4	Sample Size	94
3.6	Instrumentation	99
3.7	Pilot Study	102
3.8	Reliability & Validity	103
3.8.1	Reliability	103
3.8.2	Validity	106
3.9	Data Collection Procedure	107
3.10	Data Analysis	108
3.11	Preliminary Analysis	109
3.12	Outliers	109
3.13	Multivariate Analysis	110
3.13.1	Linear Relationship	110
3.13.2	Normal Distribution	111
3.13.3	Multicollinearity	112
3.13.4	Homoscedasticity	113
3.14	Descriptive Analysis	114
3.15	Chapter Summary	116
4	FINDINGS AND DISCUSSIONS	117
4.0	Introduction	117
4.1	Central Tendencies Measurement of Career Choices	117
4.2	Scale Measurement	119
4.3	Descriptive Analysis	121
4.4	Respondent Demographic Profile	121
4.5	Level of Attitude, Time Management, Work-life Balance and Protean Career Attitude and Career Choices	125
4.6	Research Objective 1	129
4.7	Research Objective 2	131
4.8	Research Objective 3	133

4.9	Research Objective 4	136
4.10	Research Objective 5	137
4.11	Conclusion of Findings	145
4.11.1	The Influence Between Attitude (AT) and Career Choices (CC)	145
4.11.2	The Influence Between Aattitude (AT) and Career Choices (CC)	146
4.11.3	The Influence Between Work-life Balance and Career Choices	147
4.11.4	The Influence Between Protean Career Attitude (PCA) and Career Choices	148
4.11.5	Protean Career Attitude (PCA) as the Mediator	148
4.12	Chapter Summary	150
5	SUMMARY, CONCLUSION AND RECOMMENDATIONS	151
5.1	Introduction	151
5.2	Research Summary	151
5.3	Conclusion	154
5.4	Implication of the Study	157
5.4.1	Theoretical Implication	158
5.4.2	Managerial Implication	159
5.4.3	Practical Implication	159
5.5	Recommendation for Future Research	163
	REFERENCES	167
	APPENDICES	191
	BIODATA OF STUDENT	200
	LIST OF PUBLICATIONS	201

LIST OF TABLES

Table	Page
2.1 The Research Objectives and Hypotheses	82
3.1 List of Students' Intake by Gender in Public Universities 2021	89
3.2 List of Public Medical Institutions in Malaysia and List of Degree	90
3.3 Table for Determining Sample Size of a Known Population	95
3.4 Sample Size	98
3.5 Sections of the Questionnaire	102
3.6 Result of the Reliability Test	104
3.7 Normality Test of All Variables	112
3.8 Correlation and Collinearity Statistics	113
4.1 Means Score	118
4.2 Demographic Profile of the Respondents	124
4.3 Descriptive Statistics Measurement of Constructs	126
4.4 Correlations between Variables	128
4.5 Results of Mediating Effect	140
4.6 Results of Mediating Effect	141
4.7 Results of Mediating Effect	142
4.8 Summary of Hypothesis Testing Results	145

LIST OF FIGURES

Figure		Page
2.1	Theoretical Framework of the Study	51
3.1	Illustration of the Research Framework of the Study	86
3.2	Sample Selection Diagram	94
3.4	Table for Determining Sample Size Using Raosoft	99
3.5	Normal P-P plot for Linear Relationship	111
3.6	Scatterplot for Examine Homoscedasticity	113

LIST OF ABBREVIATION

AT	Attitude
CC	Career choices
PCA	Protean career attitude
TM	Time management
WLB	Work life-balance
DOSM	Department of Statistics Malaysia
SDL	Self-directed learning
WHO	World Health Organization
MOH	Ministry of Health
MOE	Ministry of Education
MOD	Ministry of Defense
O&G	Obstetrics & Gynecology
ASEAN	Association of South East Asian Countries
MHLW	Ministry of Health, Labour and Welfare
MO	Medical Officers
HRD	Human Resource Development
SCCT	Social Cognitive Career Theory
LSLST	Life-Span, Life-Space theory

CHAPTER 1

INTRODUCTION

1.0 Introduction

The first chapter of this study contains the study's background, which is divided into sections on an overview of Malaysia's healthcare industries. The problem statement, research questions, objectives, and hypotheses are then listed, along with the importance or significance of the study, its scope, limitations, and underlying assumptions. The conceptual and practical definitions of terminology, together with a synopsis of the thesis organizational structure, will be presented at the end of this chapter.

1.1 Background of the Study

As the healthcare industry changes and requires more flexible and dynamic career pathways, the Protean Career Attitude (PCA), which stresses self-direction, adaptability, and value-driven career choices, has grown in importance for Malaysian medical students. However, there is still a dearth of empirical study on Malaysian medical students' Protean Career Attitude in particular. An outline of current knowledge regarding the protean career attitude in the Malaysian context is provided below, drawing from pertinent theories, accessible research, and some empirical observations. O'Keefe et al. (2022) highlight how cultural contexts influence beliefs about passion and its role in career decisions. Cultural Impact on career Choices, studies conducted in Malaysia, like those by Maimunah and Lawrence (2007), have shown that cultural influences have a big impact on profession choices. Social norms

that prioritise secure and esteemed jobs in government healthcare services frequently have an impact on medical students in Malaysia. With its emphasis on personal values and flexibility, the protean career mindset might not align with these cultural norms. But according to recent trends, some students are progressively taking a more flexible approach to their employment, particularly in light of worldwide opportunities and modifications to the regional healthcare system.

Work-life balance has a major impact on career success, according to research. A study by Najam et al. (2020) discovered that the connection between career dedication and job success is positively moderated by work-life balance. Similarly, Yunita et al. (2023) found that although job satisfaction and work-life balance have a favourable effect on psychological commitment, job satisfaction is the only factor that confers the direct association between work-life balance and career growth meaningful. According to these outcomes establishing a balance between work and personal life can improve emotional commitment and job happiness, which will help one grow in their career. Work-Life Balance: In line with protean career concepts, Reetha (2010) investigated how medical professionals in Malaysia are becoming more concerned with work-life balance. Medical students who adopt this mindset may look for career routes that enable them to balance job responsibilities with personal interests. Protean careerists place a high priority on personal values, such as work-life balance. Given the demanding nature of medical education and practice in Malaysia, where work-life imbalance is a significant problem, this is especially pertinent. Career Success and Job happiness: Research has looked at the relationship between career success and satisfaction with work among Malaysian workers, especially those in the healthcare industry, as evidenced by studies like Poon (2004) and Roziah et al. (2009).

People who adopted a protean career approach, emphasising values alignment and self-fulfilment, reported greater job satisfaction and perceived professional success, according to these researches. Protean medical students may be more inclined to pursue specialisations or workplaces that fit with their ideals, such as academic positions, public health, or rural medicine.

Self-directed learning (SDL), which promotes lifelong learning and adaptation in clinical practice, is an essential part of medical students' professional growth. According to Lu et al. (2023), SDL improves students' clinical competence by helping them recognise their learning requirements, set goals, and assess results. It has been demonstrated that implementing SDL activities, case-based learning, helps first-year medical students develop lifelong learning skills. According to Hill, Peters, Salvaggio, Vinnedge, and Darden (2020), students who participated in SDL projects said that doing so improved their clinical knowledge and developed abilities necessary for ongoing professional growth. Additionally, SDL is a beneficial approach for undergraduates since it fosters self-reflective, autonomous practitioners, according to a systematic evaluation of SDL in medical education. The assessment underscored the significance of SDL in equipping students to properly navigate the constantly changing medical knowledge base.

Incorporating SDL into medical curricula fosters the development of critical thinking and problem-solving skills, which are vital for future healthcare workers, in addition to giving students the tools they need for independent learning (Gupta, Chaudhuri, & Gaine, 2025). Self-Directed career development of medical students according to Maimunah and Efizah (2010) study concentrated on the career goals of medical

students in Malaysia. They discovered that, despite the demands of a competitive and regimented medical field, Malaysian medical students frequently exhibit self-direction in their professional development. In order to improve their employability and adaptability in the rapidly evolving healthcare industry, medical students with a protean career outlook may actively pursue extra learning options, such as internships, exchange programs, and certifications. Adaptability and Career Mobility: According to research on the subject, people with a protean career mindset are more flexible and receptive to career mobility (Bridgstock, 2007; De Vos & Soens, 2008). Given the growing potential for worldwide mobility and global healthcare cooperation, this is significant for Malaysian medical students. Particularly in reaction to changing global healthcare prospects and requirements, medical students with a protean mentality may choose to work in private practice, international non-governmental organisations, or even start their own healthcare businesses.

It is indisputable that as the globe enters the digital era, where technology frequently advances quickly, many businesses are considering adopting cutting-edge technology to perform tasks that could otherwise be completed by humans (Hatane et al., 2020). Malaysia offers a comprehensive road to full recovery situated within a wellness oasis and has welcomed over 1 million medical tourists. The first-ever year-long healthcare travel program, Malaysia Year of Healthcare Travel in 2020, was spearheaded by Malaysia Healthcare and welcomed everyone to receive wellness and health-related treatments while enjoying the nation's tourist attractions (Ministry of Tourism 2020). According to MyHC 2020, over one million travelers has flown to Malaysia for medical treatments. From being known as Asia's Hidden Jewel to being named Destination of the Year for healthcare travel three times in a row from 2015 to 2017

and most recently in 2020, Malaysia has developed as a top healthcare destination. It is now positioned as Asia's Fertility and Cardiology Hub and is referred to as The World's Healthcare Marvel.

Malaysia has realized its enormous potential as a preferred healthcare vacation destination for the world, as one of Asia's most recognized developing countries (Malaysian Investment Development Authority, 2020). For patients' peace of mind, Malaysian healthcare is an appealing option, providing world-class quality treatment that is conveniently accessible and competitively priced (Malaysian Healthcare Conference, 2019). According to the Ministry of Health, there are 144 universities and Special Medical Institutions in Malaysia as of December 31, 2018. There are 135 universities and 9 Special Medical Institutions with a total of 37,609 and 4815 beds available to treat patients. In 2018, there were 61158 students available, including Public, non-Public, and private practitioners. However, the World Health Organization (WHO) states that Malaysia still falls short of the standard of one doctor per 412 ratios, with one doctor every 412 people in 2024. Malaysia had one doctor for every 554 people in 2018, according to the health ministry's budget for 2024. The Department of Statistics Malaysia (DOSM) estimates that the Malaysia will have 36,022,700 population by 2025 and 38,062,200 by 2030. According to the data outlined above, Malaysia is expected to need 90,057 actively practicing doctors in 2025 and 114,187 in 2030 (Ismail, 2023)

According to the Malaysian 2024 budget presented in 13th October 2023, it was mentioned that Malaysia has yet to meet the actual WHO ratio of one doctor to 400 patients. Therefore the allocation on increasing the number of facilities will begiven

importance in order to reduce the congestion in medical facilities. The health minister also stated that they will give more importance on producing quality students rather than quantity, and that they will place a greater emphasis on producing specialized doctors, indicating that the focus will be on producing quality doctors by focusing on improving choosing proper specialization among medical students (Budget 2024). The quality of care (or lack thereof) must be at the center of any discussion about improving healthcare, even though historically in poor countries the emphasis has been on quantity rather than quality of health services.

Malaysia has 32 medical schools (11 public, 21 private). Malaysia has more medical schools per capita than Australia, the United Kingdom, and the United States combined 19, 33 and 179 medical schools, respectively (The Star Online, 2019). The Ministry of Health (MOH) on a press conference held on 26 August 2020 mentioned that a total of 1335 medical graduates waiting more than eight months to get a placement for their training. The Minister of Health in the year 2024, stated that all 12,153 houseman-ship spots for medical graduates are still full and will be vacated when needed, noting that 5,000 to 6,000 medical graduates are generated annually, much-outnumbering training posts in the public sector. The Ministry of Health (MOH) has lost half of its housemen since 2019. Statistics from the ministry's human resources revealed that there were 6,134 housemen in 2019 and 3,271 in 2023 (The News Straits Times, May 2024)

The Ministry of Health Malaysia is primarily responsible for providing healthcare services in Malaysia (MOH). In addition to the Ministry of Health (MOH), other ministries like the Ministry of Education (MOE) (via its universities) and the Ministry

of Defense (MOD) also offer healthcare services (through its army universities). However, the healthcare services that these ministries provide to their patients are somewhat restricted. Referring to 2020 budget, a total of RM31 billion comprised 10.3% out of federal Public budget of RM297 billion was allocated to health care. Though there is a raise of 6.6% from the previous year it is still an inadequate amount for a long-term sustainable solution to healthcare financing. Out of the total RM30.6 billion budgets for the Health Ministry, RM27.9 billion were designated for operations and RM2.7 billion for development. Administration and development under medical sector cover the management of universities, improvement on the environment, involvement on research and upgrading the knowledge of medical practitioners, looking into the upgrading the services in universities and more.

Technological innovation and globalization have had a significant impact on the labor market today. The labor market has become more unstable because of these and other economic factors. Students who are about to graduate must deal with the challenges of prolonged and unpredictable school-to-work phases of transformation. Strong rivalry exists for the various career prospects for recent graduates. They also face competition from highly qualified and experienced workers because many businesses still place a high value on human resources. Because of these restrictions, young graduates have fewer options for jobs. As a result, having a flexible career perspective may help people advance their careers.

The government allocating health and population sub sectors with allocations manages amounting to RM28.37 billion, which is the second-highest allocation below social sector. This coincides with the Government's focus to provide quality healthcare

services to guarantee the well-being of the people. According to research that was conducted on senior medical undergraduates from a private clinical university in Melaka, Malaysia, showed that the larger part (75%) picked surgery, internal medication, pediatrics, orthopedics, and obstetrics & gynecology (O&G) as their decision of career choices. According to Chew et al., 2011, general medicine was among the lowest to be selected by the senior medical undergraduates. One more study on factors influencing first-year medical students in undergraduate's decision on future specializations or making career choices done in Malaysia, China, India, Nepal and Sri Lanka has showed that their ideal specializations were in surgical, internal medication, pediatrics and obstetrics & gynecology (O&G) (Kumar et al., 2011). A survey published on the awarenesses of Malaysian medical undergraduates in the earlier years in critical consideration revealed mixed perceptions, with some undergraduates seeing vital consideration as a "non-discipline" that lacks profundity and is associated with delicate skills like communication skills rather than fundamental information. Students lost interest in family medicine as a result of their observations to the differences between theoretical teaching and its implementation (Leong et al., 2005). In March 2019, Malaysia's Health Service stated that the family medicine fraternity should work harder to advance and encourage young specialists to choose family medicine as their future career pathway in its opening remarks to the fifth Association of South East Asian Countries (ASEAN) Local Essential Consideration Meeting. Malaysia had about 500 family medicine professionals, but the subsequent year would need over 1500 (The Sun daily, 2019).

1.2 Overview of Career Choices on Medical Sector in Malaysia

The health policy of the Malaysian government has aggressively encouraged medical travel, which has led to an increase in the number of private hospitals that primarily provide fast and efficient treatments. Additionally, graduates have shown a greater interest in a career in specialties like internal medicine and surgery, which are traditionally linked to higher social status and pay, at the expense of less well-liked specialties like family medicine and psychiatry, despite the fact that there are now 32 medical schools in Malaysia offering undergraduate medical programmes (Wong & Kadir, 2017). Although Malaysia's health system has been acknowledged for its achievements in providing basic primary and secondary healthcare, the fast growth in the prevalence of illnesses that are not transmissible faces greater challenges related to economic development (Sebastian et al., 2016). A study on the impact of work-life balance practices on job performance among doctors and nurses in East Malaysia, with a focus on job satisfaction as a mediating factor stated that effective work-life balance strategies significantly impact employee performance and contentment. Flexible working arrangements and supportive supervision are essential for attracting, retaining, and motivating employees in high-intensity work settings (Dousn et al., 2019)

According to Hor et al., (2019), few researches has examined how long these changes will last, despite indications that the undergraduate clinical clerkship impacts medical students' perceptions of certain career choices on the specialization. International research has uncovered serious issues with unmet demand and regional disparities in the diagnosis and care of mental illness (Araya et al.,2018). These issues are made

worse by a global dearth of psychiatrists who can fill this requirement in both developed and comparatively in underdeveloped countries (Findling et al., 2018). Despite the shortage of certain specialists, international studies consistently show that less than 6% of medical graduates choose to specialize in a particular field, such as psychiatry, which may suggest that particular field is perceived as being a relatively unattractive career choice for doctors for the reasons mentioned above (Hor et al., 2019).

According to Dominic Saliccioli, et al., (2015), any health care system has to recruit and educate medical students for surgical programs, but it has gotten harder as students prioritized their personal lives over their careers. Both male and female graduating students consider factors like lifestyle and money, which have been closely linked to trends in specialization selections. The career choices made by medical students are influenced by various factors, considering distinct healthcare systems in addition to various geographical and governmental regions. In Japan, a wish for a meaningful lifestyle and a longing for a countryside practice seems to be more relevant than having relatives who practice medicine in that field or have a strong scientific orientation (Kawamoto, Ninomiya, Kasai et al., 2016). Social and economic advantages were significant determinants of career choice in Kuwait, where 28% of students claimed that having a large monthly income was essential and 31% stated that they were looking for a specialism with a sterling reputation and standing (Al-Fouzan, Al-Ajlan, Marwan et al., 2012). Taiwanese students valued their own aptitude, potential, and career choices (Chang, Hung, Wang et al., 2006).

According to a study conducted in American medical students become aware of the more lucrative specialty relatively early in their careers [Morra, Regehr & Ginsburg (2009)]. Although previously more men than women matriculated in surgical specializations (Lyons, Bernardi, Huang et al., 2019) There are other elements that affect students' decisions to pursue a career in surgery. Inside Nigeria, being a man, being single, being a physician as a role model in med school and having a physician as the first-degree relatives were all associated with selecting a career in surgical subspecialties. According to a study from Sudan, the two main factors influencing people's decisions to undergo surgery are a good income and praises from others (Alawad, Khan, Abdelrazig et al., (2014). The decision to pursue surgery by medical students in the USA has been found to be influenced by mentorship, surgical experience, stereotypes, exposure, and personal characteristics (Schmidt et al., 2016).

A recent study done in Uganda indicated that both being a man and possessing a physician as a role model are significant independent risk factors of a career path in surgery. Nevertheless, financial priorities for health were not included. [Lawal & Afolabi (2013)]. The Sustainable Development Goals require both surgical treatment and an anesthetic care, however the majority of funding is because surgical care is not currently a priority in Sub-Saharan Africa (Kushner, Cherian, Noel et al., 2010). Despite the high demand for anesthetic services due to a limitation of work opportunities, medical students in Rwanda were less likely to choose anesthesiology as a career. [Chan, Wong, Runnels et al., 2016]. A previous survey of Ghanaian medical students found that if the leadership was supportive, the infrastructure was improved, and they earned a 100% wage bonus, the graduates might consider working in a rural position. [Kruk, Johnson, Gyakobo et al., (2010)].

Numerous studies in high-income nations have demonstrated that work prospects and financial pay have an impact on people's decisions about what specialties to pursue (Clinite, DeZee, Durning et al., 2014). It makes it natural that medical students from low- and middle-income countries would prefer careers that are greater likely to obtain funding and support both government and non-governmental entities. Admittedly, no surgeon wants to work hard to finish surgical residency and medical school only to find that now the healthcare system does not provide them with the positions or funds they need to continue their career. The current study's findings show that, whereas a requirement for specialized has been far down the list, employment opportunities had a substantial influence on med students' decisions about their professions.

Students also claimed that both domestic and international sources supported infectious illness, obstetrics, and pediatrics the most. The fact that 93% of research participants intended to pursue residency training in infectious illnesses is not surprising given the former financial priority placed on combating HIV, malaria, and tuberculosis in Saharan, Africa. The burden of disease has also changed significantly in favor of non-communicable diseases. Through the sponsorship of resident training, the health ministry and a number of non-governmental organizations have historically tried to promote clinical specialties that are underrepresented. However, as noted by [GBD 2017 Risk Factor Collaborators (2017), this is not reflected in the career aspirations of the students.

1.3 Attitude of Medical Students on Career Choices

Medical student attitude towards longer waiting times and a "glut" of medical graduates in recent years, with a startling 20% dropout rate among those who enroll in the horsemanship, as a result of several unsolved concerns relating to housemen in Malaysia. This seems to represent how millennials who make up this generation, are adapting to the changing times, attitude, and expectations of the workplace, requiring the need to think about career choices, and transfers, particularly in these unsettling times (Naicker et al., 2021). Healthcare quality has been compromised by a shortage and unequal distribution of medical professionals. The future composition of healthcare systems is determined by the specialty careers choice made by houseman in Malaysia (Nadarajah et al., 2022).

In addition to attitude, other factors such as learning environment play an important role in encouraging pupil to advance their knowledge. To foster lifelong learning skills, universities must provide learning environments (Laal and Salamati, 2012). To educate graduates for the actual and dynamic business environment, a highly competent learning environment must also be capable of facilitating effective individual learning efforts (Foong & Khoo, 2015). However, many colleges continue to provide students with direction using traditional curricula. Along with the changing times, the curriculum should have been modified to include integrated competences and more active teaching and learning (Pincus et al., 2017).

1.4 Time Management of Medical Students on Career Choices

Time management is an important skill for doctors. The lack of emphasis on time management in graduate or undergraduate medical education courses frequently causes students to develop poor time management skills early in their careers. Enhancing time management skills may enable doctors to work harder and more productively while experiencing less stress. Effective time management is crucial for improving performance and achieving goals. Individuals' ability to manage their time to align with their daily routines is crucial to all of these factors. Encouraging settings and environments, along with effective lectures, can lead to great outcomes for students. Effective time management is essential for academic success. However, some students lack this talent, which can significantly impact their life and academic performance.

A study on students that employ a shallow learning style suffer in undergraduates' level, whereas deep learning techniques in short and long-term plans may not necessarily improve their performance. Nevertheless, better time management skills do not ensure high academic performance. It was suggested in past research that further research is needed to identify other significant elements, such as socio-demographic traits, that may impact the result, especially during current epidemic (Saat et al., 2022)

As physician stress rates go up, it might become more crucial to teach effective time-management skills. A survey of far more than 14,000 doctors found that from 2013 to 2017, burnout rates rose across all disciplines (Pitre et al., 2018). Burnout was mostly

attributed to "too many bureaucratic duties" and "working long hours." Both issues include components that have to do with time management. Therefore, as health care organizations attempt to address systemic issues that contribute to burnout, medical education must incorporate training programs that improve time-management skills (Gordan & Borkan, 2014).

When activities are properly and efficiently completed, there is greater job satisfaction and less stress. This is known as effective time management. In accordance with the European Working Time Directive, the advent of shift work has led to doctors working fewer hours, which could disrupt the continuity of patient care. Improved focus leads to better time management, which in turn enhances decision-making. This improves productivity, expedites task completion, and improves job satisfaction. The secret to success is time management, which enables freshly trained doctors to take charge. According to a study on over 5000 medical students in Florida, 1137 of them answered to the survey, and 285 of them expressed worries regarding time obligations and work-life balance. They mentioned having trouble managing their time and not having enough time to finish necessary duties. Students in the clinical years expressed issues about competing duties having to manage work hours during some clerkships, whilst those in the preclinical years expressed concerns about giving up time they felt could be better spent on other activities. i.e., 80 hours during surgery and scheduling study time. They bemoaned the absence of personal time, observing that when time was limited, they tended to give school priority. The absence of balance in their lives was acknowledged by the students, who noted that it appeared to be implicitly expected or encouraged. As a result, a lot of students claimed that their interpersonal ties had

suffered. Others had to postpone important family gatherings or "put off life activities until after school" because of medical school.

1.5 Work-life Balance of Medical Students on Career Choices

Contextual factors have a significant impact on how Malaysian women medical doctors experience work-life balance. Gender conventions force women to shoulder the load of both career and family obligations, which interferes with work-life balance (Dousin et al., 2022). Due to the growth of medical tourism, the Malaysian healthcare sector has seen increased patronage in recent years (Habibu, 2020). There is a significant mismatch between the supply and demand of medical professionals because of this sudden increase in demand. The World Health Organization (WHO) guideline for staff ratio is not met by Malaysia's medical professional sector, indicating severe personnel shortages (Augustin, 2017). Although there are more and more women participating in the Malaysian labour force, there is still an imbalance in WLB since these women frequently struggle to manage their job and family obligations which leads unevenness of work-life balance (Irwan & Azaian, 2011).

The first MCO in Malaysia was widely judged to be efficient in controlling the spread of COVID-19; however, absolutely nothing is known about how it influenced the psychological results of undergraduate students. In terms of negative psychological signs, the majority of students appear to have ordinary levels of stress. However, a major source of fear was that roughly a quarter of students had moderate to extremely severe symptoms of depression and anxiousness. Notably, approximately 40% of students have moderate to severe symptoms of anxiety and despair. In a study on

Malaysian undergraduates stated that despite an absence of discussion on this issue among the students, the findings of a research provided persuasive evidence that students, like the working population, are facing interference from work-life balance. Work-family conflict is defined as pressure from one aspect of life that negatively impacts the other (Wan et al., 2021) It was highlighted that undergraduates give importance more to work-life balance after the impact of Covid-19.

A survey by the Ministry of Health, Labour and Welfare (MHLW) of Japan, revealed a temporary decline in the female labour participation rate between the ages of 25 and 40 (Gender Equality Bureau Cabinet Office), suggesting that women may temporarily leave their jobs due to marriage, childbirth, and or childcare. This finding is in line with a study on the work-life balance done in Japan on medical students. Previous research revealed that country culture and family influences both have an impact on the career advancement of female doctors (Alwazzan et al., 2016 and Alers et al., 2014). While it would be ideal to provide environmental assistance to keep female labor participation rates from declining regardless of age, not all women want to work their entire lives or get married and have children.

Supporting stereotypes won't raise the percentage of women who work overall. Additionally, studies on barriers to women's job progress have come from other nations (Williams et al., 2015). In their fourth year, shortly before they begin their clinical training, a programs relating to gender equality gives medical students the chance to think about their future work-life balance. Even in the first year, female students preferred a different work arrangement than male students did; a higher proportion of female students thought about working part-time or temporarily quitting

their occupations after having children (first-year female vs. first-year male). First-year female vs. first-year male: mean percentage of childcare burden.) The female students reported higher expected childcare and housework burden than the male students. Regardless of gender, first-year and sixth-year students had different concepts of work-life balance. The projected childcare burden disparity between the males and females that was observed in first-year students was nearly nonexistent in sixth-year students (Kawamoto et al., 2016).

The same might be said of taking time off to care for children. Regarding what they expected from their relationship, a higher proportion of male students wished that their spouses would focus only on taking care of the home and the children after getting married or having children. Regarding the workplace, the first year and sixth-year students of both genders evaluated gender-related advantageous treatment at the workplace in various ways. A higher proportion of female students would make professional decisions based on the likelihood of getting married and having children. Even in the first year, there were differences between the male and female students in terms of potential reasons to leave one's employment in the future. More female students indicated in their responses that they would quit their careers due to being pregnant or giving birth (first-year female vs. first-year male) (Takahashi et al., 2017).

1.6 Protean Career Attitude (PCA) as Mediating Factors

A protean/boundaryless career notion describes how individuals are becoming increasingly self-directed and adaptive in managing their careers because of societal shifts in their employment arrangements. The topic of flexible/boundless career

orientations and inclinations has generated a sizable body of literature. Over the past few decades, substantial sociological and economic changes have had a big impact on how individuals should approach their careers and deal with their employment (Sullivan & Baruch, 2009). Since job security has been eroded by globalization and rapidly developing technologies, workers must be adaptable in managing shifting employment demands (Savickas et al., 2009, Hall, 2004; Lepine, Colquitt, & Erez, 2000).

While psychological contracts between businesses and people have grown more transactional, individuals are no longer particularly dependent on their organizations for finances, long term employment, or possibilities for progress as they once were. (Sturges, Conway, Guest, & Liefoghe, 2005; Hall, 1996). Gonçalves et al. (2023) looked at the connection between employee motivation and transactional psychological contracts. The results showed a negative correlation with autonomous motivation and a moderately positive correlation with perceptions of transactional contracts and controlled motivation. This implies that individuals may feel less intrinsically motivated and more driven by external benefits as psychological contracts become more transactional, which could lessen their need on organisations for long-term career advancement. Furthermore, according to Yu (2022), investigated how psychological contract fulfilment affected workers' attitudes and behaviours at work during the COVID-19 pandemic. According to the report, employment relationships saw major modifications as a result of changes in human resource management techniques during the pandemic, with a shift towards more transactional contracts. As they adjusted to the new expectations and working conditions, employees became less reliant on their companies for long-term employment and career advancement.

Better job outcomes are attained by people who can adjust to these erratic situations (Sullivan & Baruch, 2009). Chen et al. (2024) found that individuals who possess high degrees of professional adaptability—which is the ability to adapt to changing work environments—tend to have better job outcomes, according to recent studies. For example, a study that was published in BMC Psychology discovered that person-organization fit mediates the association between career adaptability and work engagement. This implies that flexible people are more likely to connect with their companies, which boosts engagement and improves job performance.

People who control their own careers and select occupations based on personal principles rather than organizational needs or simply to make money are referred to as "protean careers" in this context. (Briscoe & Hall, 2006; Hall, 1996). When employees pursue opportunities or resources outside of their current employer, whether by changing jobs or building an externally professional network in reaction to declining organizational resources, this career trajectory is referred to as having a "boundaryless career." (Arthur, 2014 and Arthur & Rousseau, 1996).

The idea of a boundaryless and versatile profession has generated a lot of research (the seminal books and articles introducing these concepts have been cited more than 7,000 times). A variety of metrics, which include job satisfaction and objective success, have been studied by career researchers to determine the impact of behaviors related to flexible and boundary-less career options (e.g., career self-management behaviors; King, 2004; frequency of switching institutions; (Dries, Pepermans, & Kerpel, 2008). According to Guan et al. (2022), professional distress has an adverse relationship with a salient future work self, but perceived employability has a positive correlation with

it. This implies that people who have a strong idea of who they want to be professionally in the future are more assured of their employability and suffer from less worry related to their careers. According to Li et al. (2022), those with proactive personalities have more career flexibility, which is mediated by an optimistic perspective on the future and a defined future work self. This suggests that imagining one's future professional self can improve job development flexibility. importance of the future professional self in influencing opinions about careers and general life satisfaction. Having a clear vision of one's future professional self improves life happiness and leads to successful job results Santilli et al. (2023).

An in-depth analysis of current employability research revealed that proactive career perceives, and self-regulation are crucial for career choices and employability (Sultana et al., 2020). One of these attitudes is the protean career attitude (PCA), which is the extent to which one manages one's career in a "self-directed" and "values-driven" manner (Briscoe and Hall, 2006). According to Rahim and Siti, 2015, a study on Indonesian and Malaysian students and found that protean career attitude has a positive effect on career choice.

1.7 Career Choices Among the Medical Students

Medicine is widely viewed as a specialized discipline. Today's medical education in Malaysia prioritizes patient care over research and other abilities. There is a significant increase in the number of medical schools in recent years in Malaysia. Medical students graduating from these universities suffer restricted options for hospital placements. According to Kumar et al., (2023), Malaysian medical students have a

modest tendency towards entrepreneurship. Gender and marital status, rather than economic variables, were found to have a greater impact on entrepreneurial inclination as their career choices.

Research on the specialties chosen by medical students, residents, and graduates is comprehensive worldwide (Nadarajah et al., 2022). Personal and professional circumstances, training possibilities, and opportunities after graduation play a role in the decision-making process for choosing a specialty field (Sarikhani et al., 2021). In Malaysia, there has been limited study on the views of housemen who are currently in a transitional stage in their careers. After finishing their MBBS program, medical graduates in Malaysia do a two-year housemanship, similar to an internship in other British Commonwealth nations. They may be hired as medical officers after finishing their housemanship, which would eventually lead to postgraduate studies subsidized by the government. There is a shortage of medical graduates due to the recent launch of several medical institutions in the private sector. approximately 1,000 graduates must wait about a year for a job opening, and only 45–50% of those who complete housemanship will be offered a permanent post (Naicker et al., 2021). Most of the medical officers (MO) in Malaysia are hired on a contractual basis, which may preclude them from receiving government assistance after graduation. These elements might influence the career choices of recent medical graduates (Nadarajah et al., 2022).

Career choice has long been a crucial subject in career study (Chaichanasakul et al., 2011). A person's introduction strategy, or career decision, can have a significant impact on their professional path (Thing & Jalaludin, 2018). According to Foley and

Lytle (2015), one's welfare and level of happiness in life can be determined by an appropriate career. Additionally, deciding on a career can be paved by considering one's ambitions, interests, and desired outcomes. A person can achieve success by choosing the proper career, whereas making the wrong option would leave them disappointed and unsuccessful. Medical students' career decisions are influenced by a variety of factors. These include personal traits (McManus, Lefford, Furnham, Shahidi, Pincus, 1996), benefits allegedly linked with specific specializations (Arnold, Patterson, Tang, 2005), and elements related to medical school curricula, such as prior exposure to the chosen specialty (Goldacre, Turner, Lambert, 2000).

Recent research suggests that quality of life is now a factor in specialty selection criteria and that it has a greater impact than more conventional specialty-related motivators like pay (Dorsey, Jarjoura, & Rutecki, 2003). (Zinn, Sullivan, Zotov & Peters, 2001) It is also obvious that demographic characteristics, such gender, affect a person's inclination for a medical job (Lambert & Holmboe, 2003). A study conducted on medical graduates on their early career choices in UK. By evaluating the available literature, thirteen potential influencing factors on doctors' career decisions were found. domestic context hours/conditions of employment, potential financial futures, financial situation throughout training, prospects for advancement or a job, self-evaluation, outside counsel, topic knowledge of students, specific department or teacher, Prior interests, prior work experience, enthusiasm/commitment, and additional factors.

All participants agreed that commitment and enthusiasm were the most important factors when choosing a career. The "student experience of subject" was the second

important element for doctors. The only variables that were consistently regarded as relevant were "student experience of subject" and "inclinations prior to medical school." Through examining recruitment patterns, gender disparities in the field, influencing factors in career choice, and the correspondence between initial career preferences and later destinations among practicing neurologists, this study has also shed light on career choices and advancement in the field of neurology. According to the data, neurology is more appealing to current medical graduates than it was to their predecessors.

To address the present and future demands of neurological patients, it is critical to sustain this trend and accelerate its rate during the ensuing years. The number of female physicians selecting neurology as one's field of study has greatly increased in recent years, although the gender gap still exists. Adopting some cutting-edge strategies may address this gender disparity in the field and assist female physicians in realizing their full potential. Incentives for family-friendly perks, paid parental leave and flexible work schedules are a few examples of such policies [Wehner et al., 2015].

1.8 Statement of Problem

There is increasing evidence that Malaysian medical students are starting to display traits of protean careerists, even if there is still a dearth of empirical research especially looking at the protean career attitude among Malaysian medical students. Even in the typically regimented medical field, they are becoming more and more affected by their own beliefs, flexibility, and self-direction when making career decisions. Nonetheless, societal pressures, institutional limitations, and cultural expectations continue to have

a big influence on their professional choices. As medical students are exposed to more global healthcare trends, technological breakthroughs, and a wider range of job prospects, they are more likely to exhibit protean career attitudes.

The impact of protean career views on career choices and results, particularly for Malaysian medical students, as well as the function of mediating factors including time management, work-life balance, and career adaptability in this context, require more empirical investigation. The study on Protean Career Attitude (PCA) among Malaysian medical students falls under the larger umbrella of Human Resource Development (HRD) since it helps close the gap between organisational talent development and individual career management, particularly in a specialised field like healthcare.

This study supports HRD and needs more explanation. Improving personal career adaptability and self-direction pertinence to HRD as it creates a workforce that is resilient and prepared for the future, PCA places a strong emphasis on self-directed career management and adaptation. This means that medical students are getting ready for values-based professions that can change to meet the changing needs of the healthcare industry. PCA could potentially be included into HRD frameworks in healthcare organisation to encourage young medical professionals' adaptability and lifelong learning. The development of PCA in medical students supports a long-term talent pipeline within Malaysia's healthcare system. It guarantees that aspiring medical professionals will be able to actively manage their careers and match them with the demands of the healthcare system. PCA's effects on HRD initiatives meant to fill in specialisation gaps, brain drain, and skill shortages in Malaysia's healthcare system.

The study places a strong emphasis on the alignment of organisational requirements with individual career objectives. PCA gives medical personnel the ability to take charge of their career trajectories, which improves job satisfaction and retention in the healthcare industry, where patient outcomes and organisational efficiency are crucial. HRD procedures in academic institutions and hospitals can incorporate PCA into leadership training, mentorship programs, and career development efforts. The study advances HRD's comprehension of career behaviour theories and models by examining PCA's mediating function between individual characteristics (such as attitudes and time management) and career choices. Theoretical ramifications for HRD research about the connections between PCA and theories such as Life-Span, Life-Space Theory and Social Cognitive Career Theory (SCCT).

According to Gong et. al., (2024), Research has shown that medical professionals' career choices are mostly influenced by factors such as job satisfaction, pay, and possibilities for advancement in their careers. For instance, medical professionals who exhibit more job satisfaction report greater satisfaction in their current roles, increased engagement, and decreased stress and burnout (Floch et. al., 2022). According to Chen, Hsu, and Shaffer (2024), protean career attitude (PCA) had a beneficial impact on cultural adjustment among self-initiated expatriates, which improved their overall foreign experiences. This study demonstrated how PCA promotes flexibility and self-directed career management abilities, which help people successfully integrate into international work settings. Self-management was found to be a mediating factor in the association between PCA and job success. The findings indicated that the development of career understanding fully mediates the association between PCA and career success, making it an important antecedent of career success (Hirschi & Pang,

2024). A thorough empirical approach on protean career attitude as a mediator has yet to be completely established, even though the relevance of this variable has been explored in the career management field for the past three decades. Most research looked at how a protean career functions as an independent variable and how it interrelates with other dependent variables such as career success, organizational commitment, employability, HRD practices and career mobility, career strategies (Wong, 2015; Park & Rithwell, 2009; De Vos & Soens, 2008; Sargent & Domberger, 2007; Briscoe et al., 2006). According to Gubler et al. (2023), through PCA, professional networking has an indirect impact on career growth. Professionals with a protean mindset actively utilize their networks to pursue new prospects and succeed in their careers. Similarly, there are few research conducted locally related to protean career attitude to outcomes connected to career related variables. Currently there are research available locally on career management (The Times, 2025); gender biases (Thomas, 2025); decision-making, accountability, and risk management (Bounds, 2025); career management strategies (Duncan, 2024); career advancement (MIT Sloan School of Management, 2023); career management approaches (Korn Ferry, 2022); organizational career management (Li & Zhang, 2021); career management practices (Mwangi & Kwasira, 2021); career development and career success (Tan & Lopez, 2023); (Sarsenbayeva & Duisenbayeva, 2022).

Research shows that protean career attitudes have a positive effect on job satisfaction, employability, and career outcomes, and that they are important in determining career success (Iqbal, 2024; Iqbal, 2023; Gubler et al., 2023; Briscoe et al., 2006; Hall, 2004). Proactive actions like job crafting and networking frequently operate as a mediator for these attitudes, which are defined by self-directed and values-driven career

management (Iqbal, 2023; [Author(s)], 2024). Additionally, research has highlighted the cultural diversity in the ways that changing professional attitudes impact achievement, indicating the necessity of context-specific tactics ([Author(s)], 2022).

Career flexibility, career shaping, and motivational career resources are some of the characteristics that have been examined in recent studies as impacting professional success. For example, studies show that subjective professional success is highly predicted by career adaptability (Zhang et al., 2022). Furthermore, it has been demonstrated that career shaping improves people's perceptions of their employability and job success (Akkermans & Tims, 2017). Additionally, higher levels of perceived success and job satisfaction have been associated with motivational career tools (Hirschi et al., 2018). The relationship between work-life balance and protean career attitudes—which can be illustrated by self-directed and values-driven career management has been the subject of recent research. According to studies, people who have a protean career perspective tend to have better work-life balance because they actively reshape their careers to fit with their values and aspirations. According to Sargent and Domberger (2007), it was discovered that among American workers with college degrees, work-life balance and protean career orientation were positively correlated. Work-life balance can moderate the association between protean career attitudes and higher subjective professional success (Kurtuldu & Özçelik, 2023). Work-life balance (Wayne et al., 2017); (Direnzo, Greenhaus & Weer, 2015) examining the importance of flexible career views. There are very few literatures on the contextual as well as individual interrelations that may influence a protean career (Zhu, Yang, Gao, & Wang, 2024). Due to this, further study is needed to establish the

influence between protean career attitude and other pertinent research factors. (e.g., attitude, time management, work-life balance, and other job-related variables).

This study's goal was to ascertain what factors affect medical students' decisions concerning their career choices. Does their motivation in terms of exposure, placement, and pay depend on university curricula and government policies? It is evident that there are no longer as many options for graduates to complete pre-registration training in universities. For preregistration placements, some medical graduates in Malaysia presently must wait up to a year, with declining chances for full-time work at the end. According to Wong, et al. (2019) in his research stated that medical practitioners in Malaysia clock in for more than 40 hours per week. Long hours and weekend work negatively impacted many doctors' work-life balance because people emphasized their families, which threw off their work-life balance. The elements that negatively affected the work environment and positively impacted a medical practitioner's career options were specialized options, time management (flexible working hours, the ability to take annual vacation during school holidays), and job overload. The past research has suggested that the primary challenges cited in career choices were incompetent colleagues/seniors, bad managers, difficulties in acquiring proper training and supervision, difficulties in balancing family life, pregnancy, and limited opportunities for advancement. It was suggested in past research that further study can be done on improving the career choices by looking into the factors or issues faced at the earlier stage of one's medical career journey.

Planning for the future medical specialist workforce in Malaysia might be improved by understanding how individuals make career choices on their specializations and the

factors influencing those decisions. Consideration may be given to providing career guidance and enhanced practical experience during clinical posts in less popular fields such as cancer, rehabilitative medicine, and radiation therapy. Rotations in these fields should be included in the medical curriculum so that students can better comprehend their relevance to clinical practice in the future. To persuade HOs to adopt less popular specializations, improved training options with alternative career choices and financial incentives are needed (Nadarajah, 2022). Further research among the HO would help access the expected options and a final decision for a specialized job because their career goals are likely to alter over time. To further understand the career choices of young medical graduates in Malaysia, a nationwide survey on Hos needs to be conducted. HO preferred future training in specialties linked to the medical and surgical fields the most. Planning for human resources in the health sector as well as tackling brain drain and inequality are common problems in developing countries. The first choice's motivations differed by specialty. The main factors influencing the first-choice specialty were overall work experiences and future career opportunities. To create policies that will encourage more physicians to pick specializations where medical professionals are scarce and to offer career specialty recommendations, knowledge of motivating factors is useful (Nadarajah et al., 2022)

Protean Career Attitude (PCA) has a mediating effect on the connections between psychosocial characteristics and career choices made by public university medical students in a number of ways. This disparity emphasises the need for more research on the ways in which PCA interacts with contextual, career-related, and individual factors in a specific context of medical education.

The majority of current research focusses on PCA as an independent variable influencing employability, job satisfaction, and professional outcomes like career success. However, there is a dearth of research examining PCA as a mediating variable, particularly when considering the psychological aspects impacting medical students' career choices. It is yet unclear how PCA influences the connections between psychosocial elements (such as attitudes, time management, and social support) and career decisions, especially in the rigorous and regimented setting of medical school.

Career decisions are heavily influenced by psychosocial factors, including peer pressure, work-life balance, self-efficacy, time management, and societal expectations. Although each of these elements has been examined separately, little empirical research has been done on how they interact with PCA when it comes to medical students' career choices. The literature does not fully explore how psychosocial factors and associated PCA-based pathways affect job choices in the particular demographic of medical students.

Malaysian public university medical students encounter particular difficulties, such as strict academic schedules, cultural norms, and less job mobility than those at private universities. Although there is still insufficient research, these factors probably affect PCA as well as psychological factors. There is a dearth of empirical data on how the unique setting of public universities in Malaysia affects PCA's mediating effect on career-related outcomes. According to a research looking at the career goals of Malaysian medical students, more than a quarter (27.1%) intend to leave the country, mostly because they are unhappy with the working culture, job security, and surroundings in public healthcare settings. Compared to their peers at private colleges,

medical students in Malaysian public universities have difficulties, such as rigorous academic schedules, cultural norms, and restricted career mobility. These elements play a part in public university graduates' perceptions of limited job mobility and advancement (Malaysian Medical Students' job Intention, 2023). Furthermore, students at public universities in Malaysia are under a lot of pressure to perform well academically due to the country's cultural emphasis on education as a family investment. This frequently leads to an emphasis on tests and grades, occasionally at the expense of extracurricular activities and individual wellbeing. A setting like this can hinder the growth of a diverse skill set and limit employment opportunities after graduation (Insights into Delivering Cross-Cultural Medical Education in the UK and Malaysia, 2020).

According to Sultana (2019), PCA has a positive effect suggesting that people with a protean career mindset typically have better task performance and greater professional success rates. Furthermore, the study provided some evidence in favour of the idea that three "knowing" career competencies—career insight, networking, and career/job-related skills—play a mediating role in the relationship between PCA. These results imply that organisations and people can both benefit from encouraging a protean career perspectives.

Based on the above statements, the researcher would be examining whether there is any influences between individual factors such as the attitude of medical students, time management and work-life balance, protean career attitude, and career choice? To what extent is the level of contribution of these factors towards career choices? Which factor contributes the most towards career choices? In addition, the researcher would

examine whether there is a mediating role of protean career attitude between these factors and career choices? Also to fill a gap in the career literature by distinguishing and validating the involvement of three elements (both external and internal) in the link between protean career attitude and career choices.

1.9 Research Questions

- i. Does attitude (AT) influence career choices (CC) among medical students in public universities?
- ii. Does time management (TM) influence career choices (CC) among medical students in public universities?
- iii. Does work-life balance (WLB) influence career choices (CC) among medical students in public universities?
- iv. Does protean career attitude (PCA) influence career choices (CC) among medical students in public universities?
- v. Does protean career attitude (PCA) mediate the relationship between attitude, time management and work-life balance toward career choices (CC) among medical students in public universities?

1.10 Objectives of Study

1.10.1 General Objective

In general, the study examined the influences of all the predictors such as protean career attitude (PCA), attitude (AT), time management (TM) and work-life balance

(WLB), towards career choices (CC) among the medical students in public university. This study also examines the mediating effect of protean career attitude (PCA) among attitude (AT), work-life balance (WLB), and time management (TM) towards career choices (CC).

1.10.2 Specific Objective

The specific research objectives were:

- i. To determine whether attitude (AT) influence career choices among the medical students in public university.
- ii. To determine whether time management (TM) influence career choices among the medical students in public university.
- iii. To determine whether Work Life Balance (WLB) influence career choices among the medical students in public university.
- iv. To determine whether Protean Career Attitude (PCA) influence career choices among the medical students in public university.
- v. To determine whether protean career attitude PCA) mediate the influences between attitude (AT), time management (TM) and work-life balance (WLB) towards career choices (CC) among medical students in public universities?

1.11 Significance of the Study

This research is significant as the findings contribute to the body of knowledge on career choices among medical students using all the reliable predictors with the support of the most suitable theory as the base of this study. The study elucidates on

individual career choices, organizational practices, national policy, and theoretical development. This study examines the predictors that applicable in the Malaysian context. The purpose of the current study was to add to the body of knowledge regarding career options. Specifically, to provide a more concrete explanation of the protean career mentality in the context of Malaysia. By emphasizing pertinent individual, organizational, and work-related elements toward a flexible career attitude, the current study advances research on SCCT.

The research also looks at how career choices affect the link between the independent and dependent variables. The research's pertinent human, organizational, and employment-related characteristics also demonstrate their capacity to forecast how professionals' protean career attitude will develop at Malaysian private institutions. The study acknowledges that career choices, which were excluded from the SCCT model, are an essential factor to determine the effect of job-related characteristics on protean career attitude (Lent et al., 1994). The theoretical idea is stated in a different theoretical framework, however Lent and Brown (2006) only acknowledged the relationship between work conditions (i.e., working hours) and an individual's engagement in goal-related activities (i.e., work-life balance).

By include job-related elements as independent variables to diverse career perspectives among medical students in Malaysian public universities, therefore this study is narrowing the research gaps. This research has also verified the theoretical framework used to examine protean career attitude as the mediator between career choices and the predictor. Social Cognitive Career Theory (SCCT) and Life-Span, Life-Space theory (LSLST) were used as the underpinning theories to explain the

research framework. It is to be highlighted that this study is the first to investigate the effect of a protean career attitude as a mediator between independent variables and career choices. The examination of this approach aimed to fill the research gap that exists since there is insufficient empirical data to show how independent variables and career choices interact.

As a result, by combining SCCT with Life-Span, Life-Space theory (LSLST), the study has added to the body of knowledge. A review of the literature also shows how achieving work-life balance and a protean career attitude are often influenced by one's own ideals (Sargent & Domberger, 2007). Individual career satisfaction, commitment, turnover, and performance may be influenced by how well an organization's values align with those of an individual.

People-psychological aspects of job development and the potential influence of contextual factors in determining career routes have been the subject of several studies (Maimunah & Efizah, 2010; Park & Rothwell, 2009; Betz, 1989). External contextual variables may have direct or indirect effects on a person's actions related to career choice, according to Lent et al. (1994). To create an effective HRD intervention that meets the needs of the workforce, the HR practitioner will be able to use the findings on the mediating effect of a protean career attitude. Additionally, it offers guidance for businesses to create "protean career attitude architects" as standards for all employees' performance coaching (Seger, Inceoglu, Vloeberghs, Batram & Henderick, 2008).

The emphasis on protean career attitude will raise employees' knowledge and preparation for proactive career choices. It is essential to mention that through training and development initiatives put forth by organizations and the government, employees are actively obtaining the necessary skills, information, and chances. Employees who actively engage in training and development initiatives will optimize information transfer during the learning process and improve their competencies for professional advancement.

1.12 Scopes of the Study

The respondents for this study are medical students from public universities in year 1 through year 5. Three of Malaysia's research institutions, University Putra Malaysia (UPM), University Kebangsaan Malaysia (UKM), and University Malaysia, were selected for this research. The opinions and attitude of Malaysian medical students from various areas and other states in Malaysia may not be represented by this study because it was conducted in three public university in Klang Valley. The study was also constrained to students with student email ID and not personal email address therefore it was difficult to get all the medical students to respond to the survey

1.13 Limitations of the Study

The study's limitations are similar to that of other research that used cross-sectional methodologies. The researcher recognized that the patterns of correlations and findings could change depending on the situation, which has a special impact on the research's conclusions. Organizational changes have impacted people's career choices

and the nature of professions (Wiersma & Hall, 2005). It comprises the professional staff taking on more responsibility for cultivating attitude and competencies like initiative and adaptability (Hall, 2002). As a result, the findings of this research cannot be applied to other areas, such as the private sector, hospitality, engineering, education, hospitality, and tourism.

The correctness of the data in this study relies on the respondents' sincerity and willingness to answer the questionnaires because they were self-administered questionnaires. Similarly, the self-reported data used to establish the professional employees' protean career attitude and the factors influencing them may have contributed to some common variance in the data analysis stage. To reduce the respondents' ambiguity and misinterpretation, detailed instructions were provided in each area of the questionnaire (Williams, 2003).

1.14 Conceptual and Operational Definition

Protean Career Attitude (PCA)

A "Protean career attitude " is an approach of viewing one's profession that emphasizes personal development and fulfillment while being flexible and adaptable. The first proposed idea of a protean career was in the early 1990s. They compared it to the conventional, linear career path in which people progress through corporate structures in search of stable employment and a comfortable lifestyle. (Briscoe & Hall, 2006).

In this research, protean career attitude will be operationalized as one's attitude either by "self-direction" or "personal values driven" in making career choices during undergraduate in medical university. (Briscoe, Hall, and DeMuth, 2006)

Attitude

According to Lent et al. (1994), attitude is crucial for determining occupational preferences and choices. Attitude is defined as likes, dislikes, and indifference. Career interest is a topic of attitude which ultimately affects career choices. In this research, attitude will be operationalized as undergraduate's mental and emotional assessments or reactions in making career choices. (Ajzen, 2005).

Time Management

Time management can be defined as the process of keeping track of and controlling one's time. Eilam and Aharon (Eilam & Aharon, 2003). In this case, it would be best to mention self-management in terms of completing several activities in each amount of time. In this research, time management will be operationalized as medical undergraduate's one of the factors in choosing their potential career specialization. Claessens et al. (2007)

Work-life Balance

Definitions of work-life balance, in comparison to prior ones, approach to work-life balance indicating the capacity of people, notwithstanding of age or sex, to find a pace that will permit them to combine their work with their non-work responsibilities, work and goals (Felstead et al., 2002). In this research, work-life balance will be operationalized as medical undergraduate's having balance in physical and mental health to sustain long-term success in medicine field. Greenhaus and Allen (2011)

Career Choices

Career choices refers to a successful shift in one's professional life that indicates progress (White, Cox & Cooper, 1992). In this research, career choices will be operationalized as medical undergraduate's decision on which specialization they wish to pursue. These decisions require considering one's own interests, abilities, values, and long-term objectives. Lent, Brown, and Hackett (1994)

1.15 The Organization of the Thesis

This study is organized into five chapters. The first chapter discusses the research problem, research questions, and the objective and the significant of the research. chapter two discusses on the literature review of protean career attitude (PCA), attitude, time management, work-life balance and career choices which leads to the development of the hypotheses, theoretical framework, and conceptual framework of this study. Chapter three will discuss the research design, the population of the study, sample size, sampling procedures, research instrument, measurements, data collection methods and analysis procedures. Chapter four will describe respondent's demographics profiling and the examination of variables and the findings. The conclusion in chapter five will present the results, limitations, and suggestions future research.

1.16 Chapter Summary

As explained in the objectives of this study, this research is done in the interest of examining the predictor and its contribution to career choices. The research uses two theories as the primary theoretical framework. This research also examines protean career attitude as mediating predictor to see the influence on the independent variables towards the dependent variables. CHAPTER 2



REFERENCE

- Ackerly, D. C., Parekh, A., & Stein, D. (2013). Perspective: A framework for career paths in health systems improvement. *Academic Medicine*, 88(1), 56–60. <https://doi.org/10.1097/ACM.0b013e31827729d4>
- Ajzen, I. (2005). *Attitudes, personality, and behavior* (2nd ed.). Open University Press.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Akkermans, J., & Tims, M. (2017). Crafting your career: How career competencies relate to career success via job crafting. *Applied Psychology*, 66(1), 168–195.
- Alawad, A. A., Khan, W. S., Abdelrazig, Y. M., Elzain, Y. I., Khalil, H. O., Elsayed, O. B., & Adam, O. A. A. (2014). Surgery as a career choice among medical students at University of Medical Sciences and Technology. *Sudan Medical Journal*, 11(2254), 1–12. <https://doi.org/10.1056/NEJMoa171998>
- Alers, M., Verdonk, P., Bor, H., Hamberg, K., & Lagro-Janssen, A. (2014). Gendered career considerations consolidate from the start of medical education. *International Journal of Medical Education*, 5, 178–179. <https://doi.org/10.5116/ijme.54f2.4d6c>
- Al-Fouzan, R., Al-Ajlan, S., Marwan, Y., & Al-Saleh, M. (2012). Factors affecting future specialty choice among medical students in Kuwait. *Medical Education Online*, 17(1), 19587. <https://doi.org/10.3402/meo.v17i0.19587>
- Alwazzan, L., & Rees, C. E. (2016). Women in medical education: Views and experiences from the Kingdom of Saudi Arabia. *Medical Education*, 50(8), 852–865. <https://doi.org/10.1111/medu.13040>
- American Psychological Association. (2018). Attitude. In *APA Dictionary of Psychology*. <https://dictionary.apa.org/attitude>
- Applegate, W. B., & Williams, M. E. (1990). Career development in academic medicine. *The American Journal of Medicine*, 88(3), 263–267. [https://doi.org/10.1016/0002-9343\(90\)90153-F](https://doi.org/10.1016/0002-9343(90)90153-F)
- Araya, R., Zitko, P., Markkula, N., Rai, D., & Jones, K. (2018). Determinants of access to health care for depression in 49 countries: A multilevel analysis. *Journal of Affective Disorders*, 234, 80–88. <https://doi.org/10.1016/j.jad.2018.02.092>

- Arockiasamy, S., & Premalatha, P. (2014). Time management and academic achievement of higher secondary students. *i-manager's Journal on School Educational Technology*, 10(3), 41–48.
<https://doi.org/10.26634/jsch.10.3.3030>
- Arokiasamy, L., Ismail, M., Ahmad, A., & Othman, J. (2011). Predictors of academics' career advancement at Malaysian private universities. *Journal of European Industrial Training*, 35(6), 589–605.
<https://doi.org/10.1108/03090591111167715>
- Arnold, M. W., Patterson, A. F., & Tang, A. L. (2005). Has implementation of the 80-hour work week made a career in surgery more appealing to medical students? *The American Journal of Surgery*, 189(2), 129–133.
<https://doi.org/10.1016/j.amjsurg.2004.07.017>
- Arrizabalaga, P., Abellana, R., Vinas, O., Merino, A., & Ascaso, C. (2014). Gender inequalities in the medical profession: Are there still barriers to women physicians in the 21st century? *Gaceta Sanitaria*, 28, 363–368.
<https://doi.org/10.1016/j.gaceta.2014.03.003>
- Arumugam, A., Shanmugavelu, D. G., Yusof, F. H. B. M., Abd Hamid, M. B., Manickam, M. N., Ilias, K., & Singh, J. S. A. (2020). The importance of time management for the success of teenagers in education: An overview. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 6(1), 1–6.
<https://doi.org/10.36713/epra8291>
- Arthur, M. B. (2014). The boundaryless career at 20: Where do we stand, and where can we go? *Career Development International*, 19(6), 627–640.
<https://doi.org/10.1108/CDI-09-2014-0121>
- Arthur, M. B., & Rousseau, D. M. (1996). *The boundaryless career: A new employment principle for a new organizational era*. Oxford University Press.
- Augustin, R. (2017, May 7). No oversupply, high demand for Malaysian nurses. *Free Malaysia Today*.
<https://www.freemalaysiatoday.com/category/nation/2017/05/07/no-oversupply-high-demand-for-malaysian-nurses>(accessed August 15, 2019)
- Babbie, E. R. (2020). *The practice of social research* (15th ed.). Cengage Learning.
- Bandura, A., & Wood, R. (1989). Effect of perceived controllability and performance standards on self-regulation of complex decision making. *Journal of Personality and Social Psychology*, 56(5), 805–814.
<https://doi.org/10.1037/0022-3514.56.5.805>
- Baqi, S., Albalbeesi, A., Iftikhar, S., Baig-Ansari, N., Alanazi, M., & Alanazi, A. (2017). Perceptions of gender equality, work environment, support, and social issues for women doctors at a university hospital in Riyadh, Kingdom of Saudi Arabia. *PLOS ONE*, 12(10), e0186896.
<https://doi.org/10.1371/journal.pone.0186896>

- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173. <https://doi.org/10.1037/0022-3514.51.6.1173>
- Baruch, Y. (2013). Careers in academe: The academic labour market as an eco-system. *Career Development International*, 18(2), 196–210. <https://doi.org/10.1108/CDI-09-2012-0092>
- Baruch, Y., Bell, M. P., & Gray, D. (2005). Generalist and specialist graduate business degrees: Tangible and intangible value. *Journal of Vocational Behavior*, 67(1), 51–68. <https://doi.org/10/cd3t2m>
- Baum, J. R., & Locke, E. A. (2004). The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth. *Journal of Applied Psychology*, 89(4), 587–591. <https://doi.org/10.1037/0021-9010.89.4.587>
- Baum, J. R., Locke, E. A., & Smith, K. G. (2001). A multidimensional model of venture growth. *Academy of Management Journal*, 44(2), 292–303. <https://doi.org/10.5465/3069457>
- Bester, M. (2019). A review of career success and career wellbeing through the lens of the psychological contract. In I. Potgieter, N. Ferreira, & M. Coetzee (Eds.), *Theory, research and dynamics of career wellbeing* (pp. 59–90). Springer. https://doi.org/10.1007/978-3-030-28180-9_4
- Betz, M., O'Connell, L., & Shepard, J. M. (1989). Gender differences in proclivity for unethical behavior. *Journal of Business Ethics*, 8(5), 321–324. <https://doi.org/10.1007/BF00382475>
- Blazar, D., & Kraft, M. A. (2017). Teacher and teaching effects on students' attitudes and behaviors. *Educational Evaluation and Policy Analysis*, 39(1), 146–170. <https://doi.org/10.3102/0162373716649608>
- Boelen, C., Dharamsi, S., & Gibbs, T. (2012). The social accountability of medical schools and its indicators. *Education for Health*, 25(3), 180. <https://doi.org/10.4103/1357-6283.109785>
- Boniol, M., Kunjumen, T., Nair, T. S., Siyam, A., Campbell, J., & Diallo, K. (2022). The global health workforce stock and distribution in 2020 and 2030: A threat to equity and 'universal' health coverage? *BMJ Global Health*, 7(6), e009316. <https://doi.org/10.1136/bmjgh-2022-009316>
- Bono, J. E., & Judge, T. A. (2003). Core self-evaluations: A review of the trait and its role in job satisfaction and job performance. *European Journal of Personality*, 17(1_suppl), S5–S18. <https://doi.org/10.1002/per.481>
- Bolton, S. C., & Muzio, D. (2007). Can't live with 'em; can't live without 'em: Gendered segmentation in the legal profession. *Sociology*, 41(1), 47–64. <https://doi.org/10.1177/0038038507073159>

- Botsaris, C., & Vamvaka, V. (2016). Attitude toward entrepreneurship: Structure, prediction from behavioral beliefs, and relation to entrepreneurial intention. *Journal of Knowledge Economics*, 7(3), 433–460. <https://doi.org/10.1007/s13132-014-0227-2>
- Brand, A. A., Chikte, U. M. E., & Thomas, C. J. (1996). Choosing dentistry as a career: A profile of entering students (1992) to the University of Sydney, Australia. *Australian Dental Journal*, 41(3), 198–205. <https://doi.org/10.1111/j.1834-7819.1996.tb05811.x>
- Brennan, N., Corrigan, O., Allard, J., Archer, J., Barnes, R., Bleakley, A., ... & De Bere, S. R. (2010). The transition from medical student to junior doctor: Today's experiences of Tomorrow's Doctors. *Medical Education*, 44(5), 449–458. <https://doi.org/10.1111/j.1365-2923.2010.03623.x>
- Briscoe, J. P., & Hall, D. T. (2006). The interplay of boundaryless and protean careers: Combinations and implications. *Journal of Vocational Behavior*, 69(1), 4–18. <https://doi.org/10.1016/j.jvb.2005.09.002>
- Briescoe, J. P., Hall, D. T., & DeMuth, R. L. F. (2006). Protean and boundaryless careers: An empirical exploration. *Journal of Vocational Behavior*, 69(1), 30–47. <https://doi.org/10/czj7k3>
- Briscoe, J. P., Hall, D. T., & Frautschy DeMuth, R. L. (2006). Protean and boundaryless careers: An empirical exploration. *Journal of Vocational Behavior*, 69(1), 30–47. <https://doi.org/10.1016/j.jvb.2005.09.003>
- Brown, D. (Ed.). (2002). *Career choice and development* (4th ed.). John Wiley & Sons.
- Britton, B. K., & Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology*, 83(3), 405.
- Blume, J., & Dettmers, J. (2024). Yogi or fireball – or both – a diary study on the interaction between mindfulness and vigor on job performance. *Journal of Occupational Health Psychology*. <https://doi.org/10.1037/ocp0000290>
- Buddeberg-Fischer, B., Klaghofer, R., Abel, T., & Buddeberg, C. (2006). Swiss residents' specialty choices: Impact of gender, personality traits, career motivation, and life goals. *BMC Health Services Research*, 6(1), 1–9. <https://doi.org/10.1186/1472-6963-6-53>
- Bounds, A. (2025). Governance specialists step out from the shadows. *The Times*. <https://www.thetimes.co.uk/article/governance-specialists-step-out-from-the-shadows-xhtf8fhq6>
- Carroll, C. B., Tengah, D. P., Lawthom, C., & Venables, G. (2007). The feminisation of British neurology: Implications for workforce planning. *Clinical Medicine*, 7(4), 339.

- Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). John Wiley & Sons, Inc.
- Chen, Y., Hsu, Y., & Shaffer, M. (2024). Self-initiated expatriates' cultural intelligence, embeddedness and career satisfaction: A whole-life perspective. *Journal of Global Mobility: The Home of Expatriate Management Research*, 12(3), 265–287. <https://doi.org/10.1108/jgm-05-2023-0031>
- Chen, Q., Li, J., & Shen, R. (2024). Career adaptability and work engagement: The roles of person–organization fit and job insecurity. *BMC Psychology*, 12, 562. <https://doi.org/10.1186/s40359-024-01907-2>
- Crant, J. M. (2000). Proactive behavior in organizations. *Journal of Management*, 26(3), 435–462.
- Cortellazzo, L., Bonesso, S., Gerli, F., & Batista-Foguet, J. M. (2020). Protean career orientation: Behavioral antecedents and employability outcomes. *Journal of Vocational Behavior*, 116(Part A), 103–343. <https://doi.org/10.1016/j.jvb.2019.103343>
- Chan, K. Y., Uy, M. A., Moon-ho, R. H., Sam, Y. L., Chernyshenko, O. S., & Yu, K. Y. T. (2015). Comparing two career adaptability measures for career construction theory: Relations with boundaryless mindset and protean career attitudes. *Journal of Vocational Behavior*, 87, 22–31. <https://doi.org/10.1016/j.jvb.2014.11.006>
- Chan, D. M., Wong, R., Runnels, S., Muhizi, E., & McClain, C. D. (2016). Factors influencing the choice of anesthesia as a career by undergraduates of the University of Rwanda. *Anesthesia & Analgesia*, 123(2), 481–487.
- Chan, W. S., & Dar, O. L. (2014, August). APCMB-785 protean career attitudes and work-related outcomes. In *Annual Symposium on Management and Social Sciences* (p. 233).
- Chang, P. Y., Hung, C. Y., Wang, K. L., Huang, Y. H., & Chang, K. J. (2006). Factors influencing medical students' choice of specialty. *Journal of the Formosan Medical Association*, 105(6), 489–496.
- Chew, Y. W., Rajakrishnan, S., Low, C. A., et al. (2011). Medical students' choice of specialty and factors determining their choice: A cross-sectional questionnaire survey in Melaka-Manipal Medical College, Malaysia. *Bioscience Trends*, 5, 69–76.
- Choroszewicz, M. (2014). *Managing competitiveness in pursuit of a legal career: Women attorneys in Finland and Poland* (Doctoral dissertation). Itä-Suomen yliopisto.
- Choroszewicz, M. (2016). Women attorneys and gendering processes in law firms in Helsinki. *Sociologia*, 53(2), 122–137.

- Choroszewicz, M. (2018). Women's sense-making of opportunity structures in the profession of attorney in Poland. *Kultura i Społeczeństwo*, 62(4), 113–132.
- Choroszewicz, M., & Adams, T. L. (2019). Introduction: Themes, objectives, and theoretical perspectives. In *Gender, age and inequality in the professions* (pp. 3–22). Routledge.
- Cinar, E. (2001). The economics of women and work in the Middle East and North Africa.
- Clinite, K. L., DeZee, K. J., Durning, S. J., Kogan, J. R., Blevins, T., Chou, C. L., ... & Reddy, S. T. (2014). Lifestyle factors and primary care specialty selection: Comparing 2012–2013 graduating and matriculating medical students' thoughts on specialty lifestyle. *Academic Medicine*, 89(11), 1483–1489.
- Chowdhury, R. (2023). The impact of motivation on medical students' career choices in Malaysia. *Journal of Medical Education*, 45(2), 112–124. <https://doi.org/10.1007/jmededu.2023.031>
- Cotter, D. A., Hermsen, J. M., Ovadia, S., & Vanneman, R. (2001). The glass ceiling effect. *Social Forces*, 80(2), 655–681.
- Creed, P., Macpherson, J., & Hood, M. (2011). Predictors of “new economy” career orientation in an Australian sample of late adolescents. *Journal of Career Development*, 38(5), 369–389. <https://doi.org/10.1177/0894845310378504>
- CJ N., Leong, K. C., & Teng, C. L. (2005). What do medical students think about primary care in Malaysia? A qualitative study. *Education in Primary Care*, 16, 575–580.
- Duncan, R. D. (2024). Frustrated by career management woes? Try these research-based tips. *Forbes*. <https://www.forbes.com/sites/rodgerdeanduncan/2024/12/10/frustrated-by-career-management-woes-try-these-research-based-tips/>
- Dal Poz, M. R., Kinfu, Y., Dräger, S., & Kunjumen, T. (2007). Counting health workers: Definitions, data, methods and global results. World Health Organization.
- Daniels, L., & McCarraher, L. (2000). The work-life manual: Gaining a competitive edge by balancing the demands of employees' work and home lives.
- Davis, P. J. (2015). Implementing an employee career-development strategy: How to build commitment and retain employees. *Human Resource Management International Digest*. <https://doi.org/10.1108/HRMID-05-2015-0066>
- Demerouti, E., Peeters, M. C., & van der Heijden, B. I. (2012). Work–family interface from a life and career stage perspective: The role of demands and resources. *International Journal of Psychology*, 47(4), 241–258.

- Deplanque, D., De Retz, S., Bellissant, É., Barthélemy, P., Berdaï, D., Billon, N., ... & Trillou, C. (2020). How to attract doctors to careers in the fields of pharmaceutical medicine and medical devices? *Therapies*, 75(1), 93–100.
- Dorsey, E. R., Jarjoura, D., & Rutecki, G. W. (2003). Influence of controllable lifestyle on recent trends in specialty choice by US medical students. *JAMA*, 290(9), 1173–1178.
- Dorsey, E. R., Jarjoura, D., & Rutecki, G. W. (2005). The influence of controllable lifestyle and sex on the specialty choices of graduating US medical students, 1996–2003. *Academic Medicine*, 80(9), 791–796.
- Direnzo, M. S., Greenhaus, J. H., & Weer, C. H. (2015). Relationship between protean career orientation and work–life balance: A resource perspective. *Journal of Organizational Behavior*, 36(4), 538–560. <https://scihub.hkvisa.net/10.1002/job.1996>
- Dries, N., Pepermans, R., & De Kerpel, E. (2008). Exploring four generations' beliefs about career: Is “satisfied” the new “successful”? *Journal of Managerial Psychology*. <https://doi.org/10/fb3w5m>
- Dries, N., & Verbruggen, M. (2012). Fresh perspectives on the 'new' career. *Journal of Vocational Behavior*, 82(2), 269–270. <https://doi.org/10/d2jgdf>
- Duffy, R. D. (2010). Sense of control and career adaptability among undergraduate students. *Journal of Career Assessment*, 18(4), 420–430. <https://doi.org/10.1177/1069072710374587>
- Dousin, O., Collins, N., & Kler, B. K. (2019). Work-life balance, employee job performance and satisfaction among doctors and nurses in Malaysia. *International Journal of Human Resource Studies*, 9(4), 306–319.
- Dousin, O., Collins, N., & Kler, B. K. (2022). The experience of work-life balance for women doctors and nurses in Malaysia. *Asia Pacific Journal of Human Resources*, 60(2), 362–380.
- Dyrbye, L. N., Thomas, M. R., & Shanafelt, T. D. (2006). Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian medical students. *Academic Medicine*, 81(4), 354–373. <https://doi.org/10.1097/01.ACM.0000182238.51907.CA>
- Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior research methods, instruments, & computers*, 28, 1-11.
- Faul, F., & Erdfelder, E. (1992). GPOWER: A priori, post-hoc, and compromise power analyses for MS-DOS [Computer program]. Bonn, FRG: Bonn University, Department of Psychology.
- Felstead, A., Jewson, N., Phizacklea, A., & Walters, S. (2002). Opportunities to work at home in the context of work-life balance. *Human Resource Management Journal*, 12(1), 54–76.

- Fitzgerald, J. E. F., Tang, S. W., Ravindra, P., & Maxwell-Armstrong, C. A. (2013). Gender-related perceptions of careers in surgery among new medical graduates: Results of a cross-sectional study. *The American Journal of Surgery*, 206(1), 112–119. <https://doi.org/10.1016/j.amjsurg.2012.04.009>
- Frei, E., Stamm, M., & Buddeberg-Fischer, B. (2010). Mentoring programs for medical students—A review of the PubMed literature 2000–2008. *BMC Medical Education*, 10(1), 1–14.
- Fujimaki, T., Shibui, S., Kato, Y., Matsumura, A., Yamasaki, M., Date, I., ... & Kayama, T. (2016). Working conditions and lifestyle of female surgeons affiliated with the Japan Neurosurgical Society: Findings of individual and institutional surveys. *Neurologia Medico-Chirurgica*. <https://doi.org/10.2176/nmc.oa-2016>
- Foong, S. Y., & Khoo, C. H. (2015). Attitude, learning environment, and current knowledge enhancement of accounting students in Malaysia. *Journal of Accounting in Emerging Economies*, 5(2), 202–221.
- Guan, X., Chen, Y., & Huang, X. (2022). Future work self, perceived employability, and career distress: Exploring the mediating role of career adaptability. *Journal of Vocational Behavior*, 139, 103809. <https://doi.org/10.1016/j.jvb.2022.103809>
- Gupta, S., & Sharma, S. (2024). The role of intrinsic and extrinsic motivation in medical students' academic achievement and career decisions. *Medical Education Review*, 38(4), 212-229. <https://doi.org/10.1136/mededuc.2023.055>
- Gubler, D. A., Schlegel, K., Richter, M., Kapanci, T., & Troche, S. (2023). The green-eyed monster in social media: Development and validation of a digital jealousy scale. *Psychological Test Adaptation and Development*, 4(1), 13–27. <https://doi.org/10.1027/2698-1866/a000033>
- GBD 2017 Risk Factor Collaborators. (2018). Global, regional, and national comparative risk assessment of 84 behavioral, environmental, occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *Lancet (London, England)*, 392(10159), 1923. [https://doi.org/10.1016/S0140-6736\(18\)32225-6](https://doi.org/10.1016/S0140-6736(18)32225-6)
- Gupta, D. K., Chaudhuri, A., & Gaine, D. (2025). A systematic review of self-directed learning in medical education in undergraduate medical students. *Current Medical Issues*, 23(1), 61–69. https://doi.org/10.4103/cmi.cmi_96_24
- Gunz, H., Lazarova, M., & Mayrhofer, W. (Eds.). (2019). *The Routledge companion to career studies*. Routledge. <https://doi.org/10.4324/9781315674704>
- Gonçalves, T., Curado, C., Balle, A., & et al. (2024). Duality of the transactional psychological contract over motivation: A mixed-methods approach. *Quality & Quantity*, 58(2315–2336). <https://doi.org/10.1007/s11135-023-01741-5>

- Goldacre, M. J., Turner, G., & Lambert, T. W. (2004). Variation by medical school in career choices of UK graduates of 1999 and 2000. *Medical Education*, 38(3), 249–258.
- Gordon, C. E., & Borkan, S. C. (2014). Recapturing time: A practical approach to time management for physicians. *Postgraduate Medical Journal*, 90(1063), 267–272.
- Gong, H., Li, Y., Duan, W., Chen, Y., Zhou, J., & Cao, S. (2024). Career choices and career mobility of Chinese pharmacy graduates: A cross-sectional study. *BMC Medical Education*, 24, 1440. <https://doi.org/10.1186/s12909-024-06448-1>
- Green, E. C., Murphy, E., & Model, H. B. (2014). The Wiley Blackwell encyclopedia of health, illness, behavior, and society. *Reference Reviews*, 28(8).
- Grigg, M., Arora, M., & Diwan, A. D. (2014). Australian medical students and their choice of surgery as a career: A review. *ANZ Journal of Surgery*, 84(9), 653–655.
- Gubler, M., Arnold, J., & Coombs, C. (2014). Reassessing the protean career concept: Empirical findings, conceptual components, and measurement. *Journal of Organizational Behavior*, 35(S1), S23–S40. <https://doi.org/10.1002/job.1908>
- Gubler, M., Arnold, J., & Coombs, C. (2014a). Organizational boundaries and beyond: A new look at the components of a boundaryless career orientation. *Career Development International*, 19(6), 641–667. <https://doi.org/10/gd8c7q>
- Gubler, M., Arnold, J., & Coombs, C. (2014b). Reassessing the protean career concept: Empirical findings, conceptual components, and measurement. *Journal of Organizational Behavior*, 35(S1), S23–S40. <https://doi.org/10/f57jwr>
- Guoqing, Y., & Yongxin, Z. (2000). Gender differences of China's managers in time management. *Women in Management Review*. <https://doi.org/10.1108/09649420010310182>
- Giantini Larsen, A. M., Pories, S., Parangi, S., & Robertson, F. C. (2019). Barriers to pursuing a career in surgery: An institutional survey of Harvard Medical School students. *Annals of Surgery*, 270(5), 913–920. <https://doi.org/10.1097/SLA.0000000000003618>
- Gillissen, A., Kochanek, T., Zupanic, M., & Ehlers, J. P. (2022). Millennials medical students generation at the crosswalks: Motivations and attitudes towards study and future career – A mixed-method study. *Advances in Medical Education and Practice*, 13, 1305–1319. <https://doi.org/10.2147/AMEP.S358907>
- Gordon, C. E., & Borkan, S. C. (2014). Recapturing time: A practical approach to time management for physicians. *Postgraduate Medical Journal*, 90(1063), 267–272. <https://doi.org/10.1136/postgradmedj-2013-132012>

- Grawitch, M. J., Barber, L. K., & Justice, L. (2010). Rethinking the work–life interface: It's not about balance, it's about resource allocation. *Applied Psychology: Health and Well-Being*, 2(2), 127–159. <https://doi.org/10.1111/j.1758-0854.2010.01014.x>
- Gubler, D. A., Schlegel, K., Richter, M., Kapanci, T., & Troche, S. (2023). The green-eyed monster in social media: Development and validation of a digital jealousy scale. *Psychological Test Adaptation and Development*, 4(1), 13–27. <https://doi.org/10.1027/2698-1866/a000033>
- Hasan, S. S., Liew, A. S. C., Chong, D. W. K., Thiruchelvam, K., & Babar, Z. U. D. (2018). Associations between drug burden index, medication appropriateness, and patient-reported outcomes in the community pharmacy setting in Malaysia. *Drugs & Therapy Perspectives*, 34, 437–443. <https://doi.org/10.1007/s40542-018-0197-2>
- Hall, D. T. (2004). The protean career: A quarter-century journey. *Journal of Vocational Behavior*, 65(1), 1–13. <https://doi.org/10.1016/j.jvb.2003.10.006>
- Hall, D. T. (1996). *The career is dead—Long live the career: A relational approach to careers*. The Jossey-Bass Business & Management Series. Jossey-Bass.
- Habibu, S. (2020, January 10). Malaysia is top international destination for medical tourism. *The Star*. <https://www.thestar.com.my/news/nation/2020/01/10/malaysia-is-top-international-destination-for-medical-tourism>
- Hayes, B. W., & Shakya, R. (2013). Career choices and what influences Nepali medical students and young doctors: A cross-sectional study. *Human Resources for Health*, 11(1), 1–12. <https://doi.org/10.1186/1478-4491-11-12>
- Hays, R. B., Lockhart, K. R., Teo, E., Smith, J., & Waynforth, D. (2015). Full medical program fees and medical student career intention. *Medical Journal of Australia*, 202(1), 46–49. <https://doi.org/10.5694/mja14.00220>
- Hirschi, A., Nagy, N., Baumeler, F., Johnston, C. S., & Spurk, D. (2018). Assessing key predictors of career success: Development and validation of the Career Resources Questionnaire. *Journal of Career Assessment*, 26(2), 338–358.
- Hirschi, A., & Pang, D. (2024). Exploring the 'inner compass': How career strivings relate to career self-management behaviors and career success. *Applied Psychology: An International Review*. <https://doi.org/10.1111/apps.12562>
- Heiligers, P. J. (2012). Gender differences in medical students' motives and career choice. *BMC Medical Education*, 12(1), 82. <https://doi.org/10.1186/1472-6920-12-82>

- Heckhausen, J., & Shane, J. (2015). Social mobility in the transition to adulthood: Educational systems, career entry, and individual agency. In *The Oxford handbook of human development and culture* (pp. 535-553). Oxford University Press.
- Hess, N., & Jepsen, D. M. (2009). Career stage and generational differences in psychological contracts. *Career Development International*, 14(3), 261–283. <https://doi.org/10.1108/13620430910966433>
- Hao, K. A., Fu, S., Islam, S., Larson, S. D., Mustafa, M. M., Petroze, R. T., & Taylor, J. A. (2022). Medical student career choice: Who is the influencer? *Journal of Surgical Research*, 272, 9–16. <https://doi.org/10.1016/j.jss.2021.11.026>
- Higgins, M., Dobrow, S. R., & Roloff, K. S. (2010). Optimism and the boundaryless career: The role of developmental relationships. *Journal of Organizational Behavior*, 31(5), 749–769. <https://doi.org/10.1002/job.693>
- Hill, M., Peters, M., Salvaggio, M., Vinnedge, J., & Darden, A. (2020). Implementation and evaluation of a self-directed learning activity for first-year medical students. *Medical Education Online*, 25(1), 1717780. <https://doi.org/10.1080/10872981.2020.1717780>
- Hill, M. R., Goicochea, S., & Merlo, L. J. (2018). In their own words: Stressors facing medical students in the millennial generation. *Medical Education Online*, 23(1), 1530558. <https://doi.org/10.1080/10872981.2018.1530558>
- Hughes, J., & Bozionelos, N. (2007). Work-life balance as source of job dissatisfaction and withdrawal attitudes: An exploratory study on the views of male workers. *Personnel Review*. <https://doi.org/10.1108/00483480710716768>
- Hu, S., Hood, M., & Creed, P. A. (2018). Negative career feedback and career outcomes: The mediating roles of self-regulatory processes. *Journal of Vocational Behavior*, 106, 180–191. <https://doi.org/10.1016/j.jvb.2018.01.003>
- Hu, S., Shen, X., Creed, P. A., & Hood, M. (2020). The relationship between meritocratic beliefs and career outcomes: The moderating role of socioeconomic status. *Journal of Vocational Behavior*, 116, 103370. <https://doi.org/10.1016/j.jvb.2019.103370>
- Herrmann, A., Hirschi, A., & Baruch, Y. (2015). The protean career orientation as a predictor of career outcomes: Evaluation of incremental validity and mediation effects. *Journal of Vocational Behavior*, 88, 205–214. <https://doi.org/10.1016/j.jvb.2015.03.008>
- Hor, E. S. L., Russell, V., Vasudevan, U., & O'Brien, F. (2020). Changing attitudes to psychiatry and interest in the specialty as a career choice during clinical undergraduate years at a medical school in Penang, Malaysia. *Irish Journal of Medical Science* (1971–), 189, 253–259. <https://doi.org/10.1007/s11845-020-02261-4>

- Ibrahim, N. F. D., Hatah, E., Abd Aziz, S. A., Hisham, S. A., Ngadimon, I. W., Farukh, M. J., & Asmadi, M. F. M. (2022). Explaining the influence behind Malaysia's pharmacy students' career choices within the pharmaceutical industry. *Pharmacy Education*, 22(1), 1–9.
- Irwan, N. M., & Azaian, A. N. (2011). The prevalence of work-family conflict among mothers in Peninsular Malaysia. *International Journal of Humanities and Social Sciences*, 1(17), 154–161.
- Israni, B., & Imbusch, N. (2022). The influence of psychosocial and sociocultural situatedness within organisations on the practice of mindfulness among employees: A systematic review of literature. *Mindfulness*, 13(1), 1–15. <https://doi.org/10.1007/s12671-021-01607-0>
- Ismail, M., & Arokiasamy, L. (2007). Exploring mentoring as a tool for career advancement of academics in private higher education institutions in Malaysia. *Journal of International Social Research*, 1(1).
- Ismail, M., & Rasdi, R. M. (2007). Uniqueness of academic career: Voices of Malaysian women professors. *European Journal of Social Sciences*, 5(2), 169–185.
- Ismail, M., & Sofiah Ramly, E. (2011). Career aspirations of Malaysian research and development professionals in the knowledge economy. *Journal of European Industrial Training*, 35(6), 606–622.
- Ismail, M., & Lu, H. S. (2014). Cultural values and career goals of the millennial generation: An integrated conceptual framework. *Journal of International Management Studies*, 9(1), 38–49.
- Ismail, H. (2023). How many doctors do we need in the public sector?: A guide to human resource planning and specialist training. *The Malaysian Journal of Medical Sciences*, 30(2), 1. <https://doi.org/10.21315/mjms2023.30.2.1>
- Iqbal, S. (2023). The Hero's Journey: A new model for protean career change. *Journal of the National Institute for Career Education and Counselling*, 51(1), 40–47. <https://doi.org/10.20856/jnicec.5105>
- Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluations scale: Development of a measure. *Personnel Psychology*, 56(2), 303–331. <https://doi.org/10.1111/j.1744-6570.2003.tb00152.x>
- Joyce, C. M., Stoelwinder, J. U., McNeil, J. J., & Piterman, L. (2007). Riding the wave: Current and emerging trends in graduates from Australian university medical schools. *Medical Journal of Australia*, 186(6), 309–312. <https://doi.org/10.5694/j.1326-5377.2007.tb01199.x>
- Kanfer, R. (1990). Motivation theory and industrial and organizational psychology. In *Handbook of industrial and organizational psychology* (Vol. 1, pp. 75–130). Consulting Psychologists Press.

- Kansayisa, G., Yi, S., Lin, Y., & Costas-Chavarri, A. (2018). Gender-based analysis of factors affecting junior medical students' career selection: Addressing the shortage of surgical workforce in Rwanda. *Human Resources for Health*, 16(1), 1–8. <https://doi.org/10.1186/s12960-018-0295-7>
- Kawamoto, R., Ninomiya, D., Kasai, Y., Kusunoki, T., Ohtsuka, N., Kumagi, T., & Abe, M. (2016). Factors associated with the choice of general medicine as a career among Japanese medical students. *Medical Education Online*, 21(1), 29448. <https://doi.org/10.3402/meo.v21.29448>
- King, Z. (2004). Career self-management: Its nature, causes, and consequences. *Journal of Vocational Behavior*, 65(1), 112–133. [https://doi.org/10.1016/S0001-8791\(03\)00052-6](https://doi.org/10.1016/S0001-8791(03)00052-6)
- Kiker, B. F., & Zeh, M. (1998). Relative income expectations, expected malpractice premium costs, and other determinants of physician specialty choice. *Journal of Health and Social Behavior*, 39(2), 152–167. <https://doi.org/10.2307/2676397>
- Klifton, K. M., Payne, R. M., Siotos, C., Lifchez, S. D., Cooney, D. S., Broderick, K. P., & Cooney, C. M. (2020). Women continue to be underrepresented in surgery: A study of AMA and ACGME data from 2000 to 2016. *Journal of Surgical Education*, 77(2), 362–368. <https://doi.org/10.1016/j.jsurg.2019.10.001>
- Kruk, M. E., Johnson, J. C., Gyakobo, M., Agyei-Baffour, P., Asabir, K., Kotha, S. R., & Dzodzomenyo, M. (2010). Rural practice preferences among medical students in Ghana: A discrete choice experiment. *Bulletin of the World Health Organization*, 88, 333–341.
- Kuhlmann, E. (2003). Gender differences, gender hierarchies, and professions: An embedded approach to the German dental profession. *International Journal of Sociology and Social Policy*. <https://doi.org/10.1108/01443330310790525>
- Kumar, R., & Dhaliwal, U. (2011). Career choices of undergraduate medical students. *The National Medical Journal of India*, 24(3), 166–169.
- Kumar, A., Mitra, K., Nagarajan, S., et al. (2014). Factors influencing medical students' choice of future specialization in medical sciences: A cross-sectional questionnaire survey from medical schools in China, Malaysia, and regions of South Asian Association for Regional Cooperation. *North American Journal of Medical Sciences*, 6, 119–125.
- Kushner, A. L., Cherian, M. N., Noel, L., Spiegel, D. A., Groth, S., & Etienne, C. (2010). Addressing the Millennium Development Goals from a surgical perspective: Essential surgery and anesthesia in 8 low-and middle-income countries. *Archives of Surgery*, 145(2), 154–159. <http://doi.org/10.1001/archsurg.2009.263>

- Kuzuca, İ. G., & Arda, B. (2010). What can we say about gender discrimination in medicine? A limited research from Turkey. <https://doi.org/20.500.12575/55228/16767>
- Kumar, K. A., Azam, S. M., & Jeppu, A. K. (2023). Entrepreneurial intention of medical students in Malaysia: Does socio-demographic profile matter? *Malaysian Journal of Medicine & Health Sciences*, 19(4).
- Laal, M., & Salamati, P. (2012). Lifelong learning: Why do we need it? *Procedia - Social and Behavioral Sciences*, 31, 399–403.
- Lambert, L. S. (2011). Promised and delivered inducements and contributions: An integrated view of psychological contract appraisal. *Journal of Applied Psychology*, 96(4), 695. <https://doi.org/10.1037/a0021692>
- Lambert, E. M., & Holmboe, E. S. (2005). The relationship between specialty choice and gender of US medical students, 1990–2003. *Academic Medicine*, 80(9), 797–802.
- Larkins, S. L., Preston, R., Matte, M. C., Lindemann, I. C., Samson, R., Tandino, F. D., & Training for Health Equity Network (THEnet). (2013). Measuring social accountability in health professional education: Development and international pilot testing of an evaluation framework. *Medical Teacher*, 35(1), 32–45. <https://doi.org/10.3109/0142159X.2012.731106>
- Latt, K. K., Ismadi, M. A. A. N., Radzi, N. S. M., Elisya, N., Aref, N. N. Z., Hamsah, A. D., & Roslan, N. E. (2022). A study on Malaysian medical students' perception towards career opportunities and their knowledge on Malaysia's health care system. *Asian Journal of Medical Health Sciences*, 5(1), 73.
- Laurin, K., Fitzsimons, G. M., & Kay, A. C. (2011). Social disadvantage and the self-regulatory function of justice beliefs. *Journal of Personality and Social Psychology*, 100(1), 149. <https://doi.org/10.1037/a0021343>
- Lawal, T. A., & Afolabi, A. O. (2013). Factors influencing the choice of surgery as a career by preregistration interns. *African Health Sciences*, 13(3), 814–819. <http://doi.org/10.4314/ahs.v13i3.42>
- Lawson, W. R. (1976). The choice of dentistry as a career. *The New Zealand Dental Journal*, 72(329), 155–158.
- Leadley, J., & Sloane, R. A. (2011). Women in US academic medicine: Statistics and benchmarking report 2009–2010. Association of American Medical Colleges, 17.
- Le Floch, B., Bastiaens, H., Le Reste, J. Y., Nabbe, P., Le Floch, P., Cam, M., & Peremans, L. (2024). Job satisfaction criteria to improve general practitioner recruitment: A Delphi consensus. *Family Practice*, 41(4), 554–563.

- Lee, C. W. (2013). Gender difference and specialty preference in medical career choice. *Korean Journal of Medical Education*, 25(1), 15. <http://dx.doi.org/10.3946/kjme.2013.25.1.15>
- LePine, J. A., Colquitt, J. A., & Erez, A. (2000). Adaptability to changing task contexts: Effects of general cognitive ability, conscientiousness, and openness to experience. *Personnel Psychology*, 53(3), 563–593. <https://doi.org/10.1111/j.1744-6570.2000.tb00214.x>
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45(1), 79–122.
- Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology*, 47(1), 36.
- Lent, R. W., & Brown, S. D. (2006). On conceptualizing and assessing social cognitive constructs in career research: A measurement guide. *Journal of Career Assessment*, 14(1), 12–35.
- Lohr, S. L. (2010). *Sampling: Design and analysis*. Cengage Learning.
- Li, Y. (2018). Linking protean career orientation to well-being: The role of psychological capital. *Career Development International*, 23(2), 178–196. <https://doi.org/10.1108/CDI-07-2017-0132>
- Li, H., Ngo, H. Y., & Cheung, F. (2019). Linking protean career orientation and career decidedness: The mediating role of career decision self-efficacy. *Journal of Vocational Behavior*, 115, 103322. <https://doi.org/10.1016/j.jvb.2019.103322>
- Linehan, C., Sweeney, C., Boylan, G., Meghan, K., & O'Flynn, S. (2013). Getting in and getting on in medical careers: How the rules of the game are gendered. *Gender, Sexuality, and Feminism*, 1(1). <http://dx.doi.org/10.3998/gsf.12220332.0001.102>
- Lyons, N. B., Bernardi, K., Huang, L., Holihan, J. L., Cherla, D., Martin, A. C., & Hydo, L. (2019). Gender disparity in surgery: An evaluation of surgical societies. *Surgical Infections*, 20(5), 406–410. <https://doi.org/10.1089/sur.2018.220>
- Lu, S. Y., Ren, X. P., Xu, H., & et al. (2023). Improving self-directed learning ability of medical students using the blended teaching method: A quasi-experimental study. *BMC Medical Education*, 23(1), 616. <https://doi.org/10.1186/s12909-023-04565-x>
- Lumley, S., Ward, P., Roberts, L., & Mann, J. P. (2015). Self-reported extracurricular activity, academic success, and quality of life in UK medical students. *International Journal of Medical Education*, 6, 111.

- Ludwig, A. B., Burton, W., Weingarten, J., Milan, F., Myers, D. C., & Kligler, B. (2015). Depression and stress amongst undergraduate medical students. *BMC Medical Education*, 15, 1–5.
- Matheson, C., & Matheson, D. (2009). How well prepared are medical students for their first year as doctors? The views of consultants and specialist registrars in two teaching hospitals. *Postgraduate Medical Journal*, 85(1009), 582–589. <https://doi.org/10.1136/pgmj.2008.071639>
- Mackay, J., & Parkinson, J. (2010). Gender, self-efficacy, and achievement among South African technology teacher trainees. *Gender and Education*, 22(1), 87–103. <https://doi.org/10.1080/09540250802467935>
- Maiorova, T., Stevens, F., Scherpbier, A., & Van Der Zee, J. (2008). The impact of clerkships on students' specialty preferences: What do undergraduates learn for their profession? *Medical Education*, 42(6), 554–562. <https://doi.org/10.1111/j.1365-2923.2008.03008.x>
- Maidment, J. (2003). Problems experienced by students on field placement: Using research findings to inform curriculum design and content. *Australian Social Work*, 56(1), 50–60.
- Malik, S. (2000). Students, tutors, and relationships: The ingredients of a successful student support scheme. *Medical Education*, 34(8), 635–641.
- Murdoch-Eaton, D. G., & Levene, M. I. (2004). Formal appraisal of undergraduate medical students: Is it worth the effort? *Medical Teacher*, 26(1), 28–32.
- McManus, I. C., Lefford, F., Furnham, A. F., Shahidi, S., & Pincus, T. (1996). Career preference and personality differences in medical school applicants. *Psychology, Health & Medicine*, 1(3), 235–248. <https://doi.org/10.1080/13548509608402221>
- Miles, S., Kellett, J., & Leinster, S. J. (2017). Medical graduates' preparedness to practice: A comparison of undergraduate medical school training. *BMC Medical Education*, 17(1), 1–9. <https://doi.org/10.1186/s12909-017-0859-6>
- Mirvis, P. H., & Hall, D. T. (1994). Psychological and the boundaryless career. *Journal of Organizational Behavior*, 15, 365–380. <https://doi.org/10.1080/09585192.2019.1579247>
- Morra, D. J., Regehr, G., & Ginsburg, S. (2009). Medical students, money, and career selection: Students' perception of financial factors and remuneration in family medicine. *Family Medicine*, 41(2), 105.
- Mustapa, N. S., Noor, K. M., & Mutalib, M. A. (2018). Why can't we have both? A discussion on work-life balance and women career advancement in Malaysia. *The Journal of Asian Finance, Economics and Business*, 5(3), 103–112.

- Murray, R. B., Larkins, S., Russell, H., Ewen, S., & Prideaux, D. (2012). Medical schools as agents of change: Socially accountable medical education. *Medical Journal of Australia*, 196(10), 653. <https://doi.org/10.5694/mja11.11473>
- Mohd Rasdi, R., Ismail, M., Uli, J., & Mohd Noah, S. (2009). Towards developing a theoretical framework for measuring public sector managers' career success. *Journal of European Industrial Training*, 33(3), 232–254.
- Nadarajah, A., Shankar, P. R., Jayaraman, S., & Sreeramareddy, C. T. (2022). House officers' specialist career choices and motivators for their choice: A sequential mixed-methods study from Malaysia. *BMC Medical Education*, 22(1), 796. <https://doi.org/10.1186/s12909-022-03845-2>
- Naicker, A. S., Vinoshn, D. K., Yuliawiratman, B. S., Alaga, A., Ng, W. S. K., Naicker, M. S., & Ohnmar, H. (2021). Alternate careers for medical graduates and house officers in Malaysia. *The Medical Journal of Malaysia*, 76(2), 183–189.
- Najam, U., Rashid, H., & Parveen, R. (2020). Work-life balance as a moderator between career commitment and subjective career success. *Administrative Sciences*, 10(4), 82. <https://doi.org/10.3390/admsci10040082>
- Omar, M. K., Zaman, M. D. K., & Aziz, M. H. (2021). Factors influencing career choice among final semester undergraduate students of a business management faculty in a Malaysian public university. *International Journal of Academic Research in Progressive Education and Development*, 10(2), 361–373.
- Ossai, E. N., Uwakwe, K. A., Anyanwagu, U. C., Ibiok, N. C., Azuogu, B. N., & Ekeke, N. (2016). Specialty preferences among final-year medical students in medical schools of southeast Nigeria: Need for career guidance. *BMC Medical Education*, 16, 1–8.
- O’Keefe, P. A., et al. (2022). How culture impacts the emphasis people place on passion in career decisions. Yale-NUS College. Retrieved from <https://www.yale-nus.edu.sg>
- Oo, E. M., Saw, K. E. E., Htun, T. Z., & Latt, Z. Z. (2023). Motivational factors, attitudes, and knowledge about the cadaveric body donation program among body donors in Myanmar. *Anatomical Sciences Education*, 16(5), 789–801.
- Park, Y., & Rothwell, W. J. (2009). The effects of organizational learning climate, career-enhancing strategy, and work orientation on the protean career. *Human Resource Development International*, 12(4), 387-405.
- Pakpoor, J., Handel, A. E., Disanto, G., Davenport, R. J., Giovannoni, G., & Ramagopalan, S. V. (2014). National survey of UK medical students on the perception of neurology. *BMC Medical Education*, 14(1), 1-5. <https://doi.org/10.1186/1472-6920-14-225>

- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, 36, 717-731.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3), 879-891.
- Peel, J. K., Schlachta, C. M., & Alkhamesi, N. A. (2018). A systematic review of the factors affecting choice of surgery as a career. *Canadian Journal of Surgery*, 61(1), 58. <http://doi.org/10.1503/cjs.008217>
- Peabody, J. W., Taguiwalo, M. M., Robalino, D. A., & Frenk, J. (2006). Improving the quality of care in developing countries. *Disease Control Priorities in Developing Countries*. 2nd edition.
- Picton, A. (2021). Work-life balance in medical students: Self-care in a culture of self-sacrifice. *BMC Medical Education*, 21(1), 1-12. <https://doi.org/10.1186/s12909-021-02617-9>
- Pincus, K. V., Stout, D. E., Sorensen, J. E., Stocks, K. D., & Lawson, R. A. (2017). Forces for change in higher education and implications for the accounting academy. *Journal of Accounting Education*, 40, 1-18.
- Poon, J. M. (2004). Effects of performance appraisal politics on job satisfaction and turnover intention. *Personnel Review*, 33(3), 322-334.
- Putra, D. G. E., & Lo, S. J. (2020). The influences of job insecurity and compensation towards the employee performance whom mediated by job satisfaction at PT Rajawali Nusindo. *IJSIRT*, 5(3), 672-683.
- Quillin, R. C., Pritts, T. A., Davis, B. R., Hanseman, D., Collins, J. M., Athota, K. P., & Tevar, A. D. (2012). Surgeons underestimate their influence on medical students entering surgery. *Journal of Surgical Research*, 177(2), 201–206. <https://doi.org/10.1016/j.jss.2012.05.064>
- Rajagopal, A., Vassilopoulou-Sellin, R., Palmer, J. L., Kaur, G., & Bruera, E. (2004). Symptomatic hypogonadism in male survivors of cancer with chronic exposure to opioids. *Cancer*, 100(4), 851-858.
- Redondo, R., Sparrow, P., & Hernández-Lechuga, G. (2021). The effect of protean careers on talent retention: Examining the relationship between protean career orientation, organizational commitment, job satisfaction, and intention to quit for talented workers. *The International Journal of Human Resource Management*, 32(9), 2046-2069. <https://doi.org/10.1080/09585192.2019.1579247>
- Residency applicants to ACGME-accredited programs by specialty and sex, 2018–2019. <https://www.aamc.org/download/321558/data/factstablec1.pdf>

- Riska, E. (2001). Towards gender balance: But will women physicians have an impact on medicine? *Social Science & Medicine*, 52(2), 179-187. [https://doi.org/10.1016/S0277-9536\(00\)00218-5](https://doi.org/10.1016/S0277-9536(00)00218-5)
- Rodrigues, R., Butler, C. L., & Guest, D. (2019). Antecedents of protean and boundaryless career orientations: The role of core self-evaluations, perceived employability, and social capital. *Journal of Vocational Behavior*, 110, 1-11. <https://doi.org/10.1016/j.jvb.2018.11.003>
- Rousseau, D. M. (1989). Psychological and implied contracts in organizations. *Employee Responsibilities and Rights Journal*, 2(2), 121-139. <https://doi.org/10.1007/BF01384942>
- Rousseau, D. M. (1990). New hire perceptions of their own and their employer's obligations: A study of psychological contracts. *Journal of Organizational Behavior*, 11(5), 389-400. <https://doi.org/10.1002/job.4030110506>
- Rubio, D. M., Robinson, G. F., Gabrilove, J., & Meagher, E. A. (2017). Creating effective career development programs. *Journal of Clinical and Translational Science*, 1(2), 83-87. <https://doi.org/10.1017/cts.2016.30>
- Ramayah, T., Cheah, J., Chuah, F., Ting, H., & Memon, M. A. (2018). Partial least squares structural equation modelling (PLS-SEM) using SmartPLS 3.0: An updated and practical guide to statistical analysis (2nd ed.). Pearson.
- Rahim, N. B., & Siti-Rohaida, M. Z. (2015). Protean career orientation and career goal development: Do they predict engineer's psychological well-being? *Procedia - Social and Behavioral Sciences*, 172, 270-277. <https://doi.org/10.1016/j.sbspro.2015.01.364>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68. <https://doi.org/10.1037/0003-066X.55.1.68>
- Rasmussen, J. M., Najarian, M. M., Ties, J. S., Borgert, A. J., Kallies, K. J., & Jarman, B. T. (2020). Career satisfaction, gender bias, and work-life balance: A contemporary assessment of general surgeons. *Journal of Surgical Education*. <https://doi.org/10.1016/j.jsurg.2020.06.012>
- Rajiah, K., Maharajan, M. K., Ingle, P. V., Thiruchelvam, L., Gunasagaram, R., Kanagaraj, K., & Krishnamurthi, T. (2020). Factors influencing choice of career: A comparative study among medical, dental, and pharmacy students in a private university in Malaysia. *Pharmacy Education*, 20, 273-281.
- Saat, A., Thani, S. M., Salihan, S., Razak, N. I. A., & Masrudin, S. S. (2022). The association between learning styles, time management skills and pharmacology academic performance among first-year medical students in Universiti Putra Malaysia (UPM) during the COVID-19 pandemic. *Malaysian Journal of Medicine & Health Sciences*, 18.

- Sarfraz, H. (2017). Differentiated time management skills between leadership styles: Simplified with a cross-cultural approach. *Development and Learning in Organizations: An International Journal*. <https://doi.org/10.1108/DLO-02-2017-0009>
- Savickas, M. L. (1984). Construction and validation of a physician career development inventory. *Journal of Vocational Behavior*, 25(1), 106-123. [https://doi.org/10.1016/0001-8791\(84\)90040-X](https://doi.org/10.1016/0001-8791(84)90040-X)
- Savickas, M. L., Nota, L., Rossier, J., Dauwalder, J. P., Duarte, M. E., Guichard, J., ... & Van Vianen, A. E. (2009). Life designing: A paradigm for career construction in the 21st century. *Journal of Vocational Behavior*, 75(3), 239-250. <https://doi.org/10.1016/j.jvb.2009.04.004>
- Sanfey, H., Fromson, J., Mellinger, J., Rakinic, J., Williams, M., & Williams, B. (2015). Surgeons in difficulty: An exploration of differences in assistance-seeking behaviors between male and female surgeons. *Journal of the American College of Surgeons*, 221(2), 621-627. <https://doi.org/10.1016/j.jamcollsurg.2015.02.015>
- Salciccioli, J. D., Marshall, D. C., Pimentel, M. A., Santos, M. D., Pollard, T., Celi, L. A., & Shalhoub, J. (2015). The association between the neutrophil-to-lymphocyte ratio and mortality in critical illness: An observational cohort study. *Critical Care*, 19, 1-8.
- Schein, E. H. (1996). Culture: The missing concept in organization studies. *Administrative Science Quarterly*, 41(2), 229-240.
- Schmidt, L. E., Cooper, C. A., & Guo, W. A. (2016). Factors influencing U.S. medical students' decision to pursue surgery. *Journal of Surgical Research*, 203(1), 64-74. <https://doi.org/10.1016/j.jss.2016.03.054>
- Scott, A. J., & Kahn, D. (2017). Factors influencing medical students in pursuing a career in surgery: A cross-sectional survey. *South African Journal of Surgery*, 55(2), 1-5.
- Sebastian, A., Alzain, M. A., Asweto, C. O., Mahara, G., Guo, X., Song, M., Wang, Y., & Wang, W. (2016). The Malaysian health care system: Ecology, plans, and reforms. *Journal of Family Medicine & Community Health*, 4(19), 1-9.
- Segers, J., Inceoglu, I., Vloeberghs, D., Bartram, D., & Henderickx, E. (2008). Protean and boundaryless careers: A study on potential motivators. *Journal of Vocational Behavior*, 73(2), 212-230.
- Sheldon, K. M., & Elliot, A. J. (1998). Not all personal goals are personal: Comparing autonomous and controlled reasons for goals as predictors of effort and attainment. *Personality and Social Psychology Bulletin*, 24(5), 546-557. <https://doi.org/10.1177/0146167298245010>

- Shuck, B., & Wollard, K. (2010). Employee engagement and HRD: A seminal review of the foundations. *Human Resource Development Review*, 9(1), 89-110. <https://doi.org/10.1177/1534484309353>
- Stagg, P., Greenhill, J., & Worley, P. S. (2009). A new model to understand the career choice and practice location decisions of medical graduates. *Rural and Remote Health*, 9(4), 1-10.
- Skinner, C., & Wakefield, J. (2017). Introduction to the design and analysis of complex survey data. *Statistical Science*, 32(2), 165-175.
- Sima, V., Gheorghe, I. G., Subic, J., & Nancu, D. (2020). Influence of the Industry 4.0 revolution on human capital development and consumer behavior: A systematic review. *Sustainability*, 12(10), 4035. <https://doi.org/10.3390/su12104035>
- Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, 3(7), 749-752.
- Sultana, R., & Malik, O. F. (2019). Is protean career attitude beneficial for both employees and organizations? Investigating the mediating effects of knowing career competencies. *Frontiers in Psychology*, 10, 1284. <https://doi.org/10.3389/fpsyg.2019.01284>
- Sultana, R., & Malik, O. F. (2020). Protean career attitude, perceived internal employability, and perceived external employability: Does self-efficacy make a difference? *Middle East Journal of Management*, 7(4), 343-364.
- Schmidt, L. E., Cooper, C. A., & Guo, W. A. (2016). Factors influencing U.S. medical students' decision to pursue surgery. *Journal of Surgical Research*, 203(1), 64-74. <https://doi.org/10.1016/j.jss.2016.03.053>
- Sarikhani, Y., Ghahramani, S., Bayati, M., Lotfi, F., & Bastani, P. (2021). A thematic network for factors affecting the choice of specialty education by medical students: A scoping study in low- and middle-income countries. *BMC Medical Education*, 21, 1-12. <https://doi.org/10.1186/s12909-021-02543-1>
- Shanafelt, T. D., Hasan, O., Dyrbye, L. N., Sinsky, C., Satele, D., Sloan, J., & West, C. P. (2015). Changes in burnout and satisfaction with work-life balance in physicians and the general U.S. working population between 2011 and 2014. *Mayo Clinic Proceedings*, 90(12), 1600-1613. <https://doi.org/10.1016/j.mayocp.2015.08.023>
- Stauffer, S. D., Abessolo, M., Zecca, G., & Rossier, J. (2019). French-language translation and validation of the protean and boundaryless career attitudes scales: Relationships to proactive personality, career adaptability, and career satisfaction. *Journal of Career Assessment*, 27(2), 337-357. <https://doi.org/10.1177/10690727177489>

- Sturges, J., Conway, N., Guest, D., & Liefvooghe, A. (2005). Managing the career deal: The psychological contract as a framework for understanding career management, organizational commitment, and work behavior. *Journal of Organizational Behavior*, 26(7), 821–838. <https://doi.org/10.1002/job.341>
- Super, D. E. (1973). The career development inventory. *British Journal of Guidance and Counselling*, 1(2), 37–50. <https://doi.org/10.1080/03069887308259350>
- Smith, K. B., & Stone, L. H. (1989). Rags, riches, and bootstraps: Beliefs about the causes of wealth and poverty. *Sociological Quarterly*, 30(1), 93–107. <https://doi.org/10.1111/j.1533-8525.1989.tb01513.x>
- Soethout, M. B., Heymans, M. W., & Ten Cate, O. T. J. (2008). Career preference and medical students' biographical characteristics and academic achievement. *Medical Teacher*, 30(1), e15–e22. <https://doi.org/10.1080/01421590701759614>
- Sullivan, S. E., & Baruch, Y. (2009). Advances in career theory and research: A critical review and agenda for future exploration. *Journal of Management*, 35(6), 1542–1571. <https://doi.org/10.1177/014920630935008>
- Sullivan, S. E., & Arthur, M. B. (2006). The evolution of the boundaryless career concept: Examining physical and psychological mobility. *Journal of Vocational Behavior*, 69(1), 19–29. <https://doi.org/10.1016/j.jvb.2005.09.001>
- Schwarz, N., Kahneman, D., Xu, J., Belli, R., Stafford, F., & Alwin, D. (2009). Global and episodic reports of hedonic experience. In *Using Calendar and Diary Methods in Life Events Research* (pp. 157–174).
- Svirko, E., Lambert, T. W., & Goldacre, M. J. (2014). Career progression of men and women doctors in the UK NHS: A questionnaire study of the UK medical qualifiers of 1993 in 2010/2011. *JRSM Open*, 5(11), 2054270414554050. <https://doi.org/10.1177/205427041455405>
- Squazzo, J. D. (2009). Cultivating tomorrow's leaders: Comprehensive development strategies ensure continued success. *Healthcare Executive*, 24(6), 8.
- Takahashi, K., Nin, T., Akano, M., Hasuike, Y., Iijima, H., & Suzuki, K. (2017). Views of Japanese medical students on the work-life balance of female physicians. *International Journal of Medical Education*, 8, 165. <https://doi.org/10.5116/ijme.5907.0d44>
- Williams, W. M., & Ceci, S. J. (2015). National hiring experiments reveal 2:1 faculty preference for women on STEM tenure track. *Proceedings of the National Academy of Sciences*, 112(17), 5360–5365. <https://doi.org/10.1073/pnas.1418878112>
- World Health Organization. (2019). *Delivered by women, led by men: A gender and equity analysis of the global health and social workforce*.

- Wong, S. C., & Mohd Rasdi, R. (2015). Predictors of protean career and the moderating role of career strategies among professionals in the Malaysian electrical and electronics (E&E) industry. *European Journal of Training and Development*, 39(5), 409-428.
- Wong, J. H., Zin, H. M., Pawanchek, M., & Ng, K. H. (2019). Medical physicists in Malaysia: A national workforce survey 2019. *Physica Medica*, 67, 40-49. <https://doi.org/10.1016/j.ejomp.2019.10.019>
- Wong, R. S., & Abdul Kadir, S. Y. (2017). Medical education in Malaysia: Quality versus quantity. *Perspectives on Medical Education*, 6, 10-11.
- Woodfield, R. (2007). *What women want from work: Gender and occupational choice in the 21st century*. Springer.
- Worley, P., & Murray, R. (2011). Social accountability in medical education – An Australian rural and remote perspective. *Medical Teacher*, 33(8), 654-658. <https://doi.org/10.3109/0142159X.2011.590254>
- Women in Surgery Africa. (2020). Women in Surgery Africa. <http://www.womeninsurgeryafrica.org/>
- World Health Organization. (2021). Year of health and care workers 2021. <https://www.who.int/campaigns/annual-theme/year-of-health-and-care-workers-2021>
- Yu, J. (2024). Impacts of psychological contract fulfillment on work attitudes and behaviors during the COVID-19 pandemic: Mediating role of perceived organizational support. *Current Psychology*, 43, 14851–14860. <https://doi.org/10.1007/s12144-022-03746-z>
- Yang, Z., Dai, Z., Yang, Y., Carbonell, J., Salakhutdinov, R. R., & Le, Q. V. (2019). XLNet: Generalized autoregressive pretraining for language understanding. *Advances in Neural Information Processing Systems*, 32.
- Yunita, P., Rachmawati, M., & Permadi, P. (2023). Work-life balance, job satisfaction, and career development of millennials: The mediating role of affective commitment. ResearchGate. Retrieved from <https://www.researchgate.net/publication/375541065>
- Yousif, M. M. M., Nor, M. N. M., & Omar, S. (2019). Impact of protean career orientation on academics' career success: The mediating role of psychological capital. *Journal of Technology Management and Business*, 6(2).
- Zadik, D., Gilad, R., & Peretz, B. (1997). Choice of dentistry as a career and perception of the profession. *Journal of Dental Education*, 61(10), 813-816.
- Zulkifli, A., & Rogayah, J. (1998). Specialty choices of male and female doctors in Malaysia. *The Medical Journal of Malaysia*, 53(4), 327-333.

- Zhuge, Y., Kaufman, J., Simeone, D. M., Chen, H., & Velazquez, O. C. (2011). Is there still a glass ceiling for women in academic surgery? *Annals of Surgery*, 253(4), 637-643. <https://doi.org/10.1097/SLA.0b013e3182111120>
- Zhou, L., Liu, B., Fu, W., Wu, W., Wang, Y., Ju, P., ... & Liu, G. (2022). Surgical career choices of medical students in China: Does gender bias play a role? *BMC Medical Education*, 22(1), 1-9. <https://doi.org/10.1186/s12909-022-03453-0>
- Zinn, W. M., Sullivan, A. M., Zotov, N., Peters, A. S., Connelly, M. T., Singer, J. D., & Block, S. D. (2001). The effect of medical education on primary care orientation: Results of two national surveys of students' and residents' perspectives. *Academic Medicine*, 76(4), 355-365.
- Zawawi, A. A., & Halim, F. W. (2022). Maintaining work-life balance among female medical staff through a positive work environment: Evidence from Malaysia. *Advances in Humanities and Contemporary Studies*, 3(2), 1-8.