Investigation of Work-Flow State Among Medical Professionals

A Thesis Submitted in partial fulfillment of the requirement for the award of the degree of Masters of Arts In Psychology (Clinical)

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CERTIFICATE

This is to certify that the dissertation entitled "Investigation of Work-Flow State Among Medical Professionals" submitted by Srishti Garg (Regd. No. 862102044) in the partial fulfillment of the requirement for the award of the degree of Master of Arts in Psychology, to Thapar Institute of Engineering and Technology is a record of student's own work carried out by her under my guidance and supervision. The report has not been submitted for any other degree or certificate award in this or any other university or Institute.

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CANDIDATE'S DECLARATION

I, hereby declare that the work being presented in the thesis entitled, " Investigation of Work-Flow State Among Medical Professionals" in the partial fulfillment of the requirement for the award of the degree of Master of Arts in Psychology, Thapar School of Liberal Arts and Sciences, Thapar Institute of Engineering and Technology, Patiala, India. The content in this dissertation has not been submitted to any other university or institute for the award of any other degree.

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Abstract

The demands of work, stimulation, and strain are constantly balanced in the medical profession. Flow, a psychological state in which people simultaneously experience happiness, motivation, and cognitive efficiency, is a setting for subjective experience that promotes health. Individuals' assessments of the perceived difficulty and skill level can be used to pinpoint flow conditions. Little to no studies are available on work-flow state in medical professionals. The purpose of this study was to pinpoint variables connected to everyday practise of flow conditions. One set of 14 doctors took part in a thorough interview session that made up the study's qualitative component after 100 doctors who were the respondents of a questionnaire on personality and work flow. Participants completed the Big 5 inventory and the Work Flow Scale, which were used to calculate the scoring of the variables. Using SPSS-21.0, multiple regression analysis and correlation were computed. Agreableness greatly contributes to Flow, according to results from 100 respondents, although openness, conscientiousness, neuroticism, and extraversion do not. Age and length of practice in the demographic information were similarly shown to have no bearing on the work-flow state. A semi-structured interview was used in the second portion of the study's qualitative component to investigate the variables affecting flow. It was determined that factors such as work environment, family environment, challenges at work, and job satisfaction significantly influence how well medical professionals are able to achieve flow.

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Chapter 1

Introduction

“ Medicine is a science of uncertainty and an art of probability” - William Osler

This chapter discusses the sensitivity of the Flow state in Medical Professionals. A medical professional is someone who is licensed or certified to perform the necessary medical procedures within their scope of practice. This includes Medical Doctors (MD), Registered Nurses (RN), and Licensed Vocational Nurses (LVN). Young and senior doctors who are currently in practice and hold an MBBS or MD in their specialty are the focus of the current study. Being a medical professional is a constant stressor and stimulation or strain versus satisfaction. This description can be related to what Csikszentmihalyi calls the paradox of work (2014). Work provides opportunities for moving and joyful moments, but individuals frequently strive to escape it. A Study of the hospital work environment (Bringsen, Ejlertsson & Andersson, 2011) revealed issues with work design and management at the hospital, with adherence to work-related discontent, emotional tiredness, or tension. Many registered medical professionals have stated a desire to leave their position due to these conditions. These variables have been considered during the current study, as challenges, to know their effect on concentration and achievement of flow.

With doctors, every day is different, and there are many types of doctors. There are cardiologists, gynecologists, oncologists, pediatrists, and gastroenterologists and the list is endless. Even a typical day of doctors includes eight to twelve or sometimes even more hours of seeing patients and dealing with severe cases where there is little to no room for mistakes. A profession as

serious as that of doctors requires them to stay focused on each and every case with all of their skill and attention.

A short-term peak experience that is characterised by absorption, work enjoyment, and intrinsic work motivation. Three factors are present in all popular definitions of flow: absorption (complete immersion in an activity), enjoyment, and intrinsic motivation. According to Csikszentmihalyi, 1997, Csikszentmihalyi, 1988, Csikszentmihalyi et al., 1993, and Larson & Richards, 1994, these three elements are the fundamental elements that are typically included in flow research. Consequently, flow can be characterised as a brief period of peak performance at work that is characterised by absorption, enjoyment, and intrinsic motivation (Bakker, 2005). Employees who are completely involved in their work are said to be in an absorption state. They forget everything around them as time goes swiftly (Csikszentmihalyi, 1990). According to Veenhoven (1984), employees who are content with their jobs and feel good about themselves have favourable opinions of their working lives. According to cognitive and affective evaluations of the flow experience (Diener, 2000; Diener & Diener, 1996), this delight or happiness is the result. Finally, intrinsic motivation is the practise of an activity connected to work with the intention of enjoying and satisfying oneself through the activity (Deci & Ryan, 1985). Employees who are intrinsically driven are consistently engaged in their work (Harackiewicz & Elliot, 1998). Employees that are intrinsically driven by their work tasks desire to keep working because they find the activities fascinating. Work-Flow State in medical professionals is a crucial topic since it requires intense concentration, which is necessary in a serious career like medicine. Doctors might not always have the luxury of taking breaks to rest and reflect, like all other activities do.

When a person is in state of mind where they become fully immersed in an activity, they are said

to have achieved Flow (Csikszentmihalyi, 2000). Being in flow means that the person's skill is in complete sync with their challenge. The mental state of being completely lost into the task at hand, such that the individual has no track of time or activities taking place around them. Some studies are available on medical professionals experiencing Flow (Bringsén, Ejlertsson, & Andersson, 2011) but none specifically on doctors.

Available studies focus more on artists (Chemi, 2016), athletes (William, Renan, Marcus et al.,2019), nurses (Zaragoza, Gil, Río et al., 2017), but few to none on doctors. It is more important for doctors than anyone in any profession to experience Flow. The current study presents the aspect that Work related flow is related to the personality of an individual (Kenedy, 2019). In order to engage and focus on the task at hand, the person requires some sort of motivation. This motivation is achieved by the feeling of happiness felt by the person while doing the task and on completion of the task. Some personality types may be more adept at achieving flow than the typical individual. These qualities include curiosity, perseverance, a low sense of self-importance, and a strong desire to engage in activities for their own sake (Abuhamdeh, 2000).

Certain demographic details like Length of Practice, Area of Practice, Type of Practice, Age, Gender, and other factors like work environment, family environment, Goal Orientation, job satisfaction, Psychological grit, and Locus of Control, are also looked upon in detail. All these factors have been discussed in this study at length, not just through a quantitative research method, but also through a qualitative research method.

The scientific exploration of subjective experience has received little attention in psychology. Since the demise of introspective psychology, the phenomenon has frequently been considered to be outside the purview of science. However, there has been a recent increase in focus on

subjective experience (Richardson, 1999), which has sparked interest in the flow research methodology. Several self-report instruments, like as interviews, paper-and-pencil tests, measurements, and the experience sampling approach, have been developed to explore this fundamentally unstable, unaware, subjective phenomenon.

When we are in flow, our psychological energy is within our control, and everything we do brings more order to consciousness. Due to two major psychological processes, differentiation and integration, our self is more complex after a flow experience than it was before. As a result of feeling more capable and skilled following a flow experience, the self becomes distinct. Because ideas, intentions, feelings, and senses are all directed toward the same objective, flow leads to integration. One feels more in control than previously after a flow episode, both internally and in relation to other people and the outside environment. While integration fosters ties and security, differentiation encourages individuality. Some people, such as schizophrenics, are inherently incapable of experiencing flow. People who often experience flow pay attentive attention to their surroundings, find hidden chances for action, set goals, track their progress utilizing feedback, and constantly challenge themselves. Non-self conscious individualism, or having a clearly driven goal that is not self-seeking, is the most crucial characteristic of those who experience flow even in the face of adversity. They are resistant to being readily upset by outside occurrences because of their internal motivation. Work-related A short-term peak experience characterised by absorption, job enjoyment, and intrinsic work motivation is referred to as flow, and it is measured by the flow inventory (Baker, 2007).

A quantitative study done (Bryce & Haworth, 2022), showed the well being of flow in male and female office workers. Here, the main aim of the study was to examine the gender role in work related flow as well as the environement affecting flow. All the hypotheses of the study were

accepted. The results showed that flow is associated with well-being, flow is experienced more in work than in leisure and women experience more flow than men.

Another study done (Heller, Bullerjahn & Georgi, 2015) studies the relationship between personality traits, flow experience and different aspects of practice behaviour of amateur vocal students. The results indicated that the longer the practicing time, the more likely are students to achieve flow and vocalists high in extraversion experienced flow more frequently.

A qualitative study (Ezra, Ozge, Isci et al.,2015) showed that an individual's working environment influences their flow experience. Individuals whose doctoral field fits their interest ans skills, who have a clear goal and who enjoy doing their work, experience flow more often.

In addition to above mentioned studies, there have been various more studies focusing of affect of various variables like Psychological Grit (Sharma, & Shekhawat, 2017), Locus of Control (C.M. Taylor, JM Schepers, F. Crous, 2007), Goal Orientation (Stavros, Psychountaki, Georgiadis et al.,2015), Predictability, Family environment, Work environment and character strength with Work-related flow state.

In the current study, the concept of flow as it related to the workplace was examined. The office setting alone gives a person a platform to complete the task at hand and be productive without interruptions. Every profession has a specific workplace where they may work with the tools and resources they need to perform to the best of their abilities, but this study contends that there is more to achieving flow than just the physical setting. Personality (Some personality types may be more adapt at achieving flow than the typical individual. These qualities include curiosity, perseverance, a low sense of self-importance, and a strong desire to engage in activities for their own sake), job environment, family environment, locus of control, and goal orientation are all variables that can either drive someone into or pull them away from the flow state.

1.1.1 Flow :

When we are in flow, our psychological energy is within our control, and everything we do brings more order to consciousness. Due to two major psychological processes, differentiation and integration, our self is more complex after a flow experience than it was before. As a result of feeling more capable and skilled following a flow experience, the self becomes distinct. Because ideas, intentions, feelings, and senses are all directed toward the same objective, flow leads to integration. One feels more in control than previously after a flow episode, both internally and in relation to other people and the outside environment. While integration fosters ties and security, differentiation encourages individuality. Some people, such as schizophrenics, are inherently incapable of experiencing flow. People who often experience flow pay attentive attention to their surroundings, find hidden chances for action, set goals, track their progress utilizing feedback, and constantly challenge themselves. Non-self conscious individualism, or having a clearly driven goal that is not self-seeking, is the most crucial characteristic of those who experience flow even in the face of adversity. They are resistant to being readily upset by outside occurrences because of their internal motivation. Work-related A short-term peak experience characterised by absorption, job enjoyment, and intrinsic work motivation is referred to as flow, and it is measured by the flow inventory (Bakker, 2007).

1.1.2 Openness to experience :

One of the domains utilized in the Five Factor Model to explain human personality is openness to experience. Six characteristics or dimensions make up openness: a vivid imagination (fantasy), aesthetic sensitivity, awareness of one's own emotions, preference for diversity (adventurousness), intellectual curiosity, and the willingness to question the status quo (psychological liberalism). Numerous studies using psychometric methods have shown that there

is a strong correlation between these attributes. As a result, openness can be seen as a general personality feature made up of a collection of distinct qualities, routines, and tendencies that group together. The attribute of openness has a generally normal distribution, with just a small percentage of people rating exceptionally high or low on it and the majority scoring in the middle. Those with low openness ratings are viewed as being closed to experience. They frequently exhibit conventional and traditional attitudes and behaviors. They tend to have a smaller range of interests and favor known routines over novel ones. Openness and creativity, intelligence, and knowledge have mildly beneficial correlations. Like the psychological quality of absorption, openness has a tangential relationship to individual variations in hypnotic susceptibility.

1.1.3 Conscientiousness :

Being cautious or diligent is a personality attribute known as conscientiousness. Conscientiousness implies a desire to complete a task well and a serious attitude toward one's social obligations. Instead of being loose and disorganized, conscientious people are typically effective and well-organized. They tend to be reliable, show self-control, behave honorably, and strive for success. They also exhibit planned behavior as opposed to impulsive action. It shows itself in typical actions like being orderly and methodical, as well as qualities like being meticulous, thorough, and deliberate (the tendency to think carefully before acting). Most conscientious people put in a lot of effort and are trustworthy. They could also be "workaholics," "perfectionists," and compulsive if carried to the extreme. Low conscientiousness test takers are more prone to act in antisocial and illegal ways because they are more relaxed, less goal-oriented, and less driven by achievement.

1.1.4 Extraversion :

Some theories of human nature place a strong emphasis on the characteristics of extraversion and introversion. Extraversion is often spelled extroversion. Carl Jung (1921) coined the terms introversion and extraversion, however there are differences in how they are generally understood and how they are really used in psychology today. While introversion is characterized by more contemplative and reserved demeanor, extraversion frequently shows itself as gregarious, chatty, and energetic behavior. Jung described extraversion as "an attitude-type characterized by focus of interest on the external object" and introversion as "an attitude-type characterized by direction in life through subjective psychological contents." Broadness of activities (as opposed to depth), surgency from outside action or events, and energy generation from outside sources are characteristics of extraversion. The attribute is distinguished by a strong interaction with the outside world. Extraverts like connecting with others and are frequently seen as being energized. They typically have a positive, proactive attitude. They are outspoken, talk a lot, and stand up for themselves. In social situations, extraverted people may come out as more dominant than introverted ones. The social involvement and energy levels of introverts are lower than those of extraverts. They frequently come across as reserved, understated, methodical, and less socially active. They are more independent of their social surroundings than extraverts are, thus their lack of social engagement shouldn't be mistaken for shyness or despair. Compared to extraverts, introverts want less stimulus and more alone time. They are reserved in social circumstances rather than being unfriendly or antisocial, although this does not imply that they are either.

1.1.5 Agreeableness

Individual differences in the overall interest for social harmony are reflected in the agreeableness characteristic. People who are agreeable value getting along with others. Generally speaking, they are helpful, courteous, kind, giving, trusting, and willing to put others' needs ahead of their own. People who are agreeable also have a positive outlook on people. Disagreeable people prioritize their own needs over those of others. They generally don't care about other people's welfare and are less likely to sacrifice themselves for others. Sometimes they become suspicious, unpleasant, and uncooperative due to their suspicion about the intentions of others. Low agreeableness personalities are frequently demanding or competitive, which might be interpreted as argumentative. Research (Laursen, 2002) has shown that because agreeableness is a social characteristic, it positively correlates with the quality of relationships with one's team members. Positive correlation exists between agreeableness and transformational leadership abilities.

1.1.6 Neuroticism :

Numerous personality theory models (Fiske, 1949) include neuroticism as a feature, however there is substantial debate over how to define it. It is frequently described as having a propensity for rapid arousal when provoked and gradual de-arousal, particularly in the case of rapid arousal of unpleasant emotions. An alternative description contrasts emotional stability and positivity with successful adjustment with emotional instability and negativity. It has also been described as having weak self-control, a difficult time handling psychological stress, and a propensity to complain. People with low neuroticism levels are typically more emotionally stable and less sensitive to stress. They are more likely to be composed, even-tempered, and unruffled. They may not necessarily have large levels of positive emotion despite having low levels of negative

emotion.The personality theory (Eysenck, 1967), links neuroticism to a low threshold for stress or unpleasant stimuli.

1.1.7 Locus of control:

The psychological notion of locus of control describes how firmly people feel they have control over the events and encounters that have an impact on their life. Locus of control is a term used in education to describe how students view the factors that contribute to their academic success or failure.People who have a high internal locus of control believe they have a lot of personal influence over their actions, and as a result, they are more inclined to own up to their actions. For instance, I studied diligently and did well on the exams. In contrast, a person with a high external locus of control believes that their actions are the result of chance or outside forces. As an example, I scored well on the test since it was simple. According to research, those who have an internal locus of control tend to be more independent and less conforming and submissive. According to Rotter, those who have an internal locus of control are better able to fend off social pressure to follow rules or conform, maybe because they take ownership of their behaviour.

The concept of locus of control is crucial to understand in practically every area of psychology. This is mostly due to the fact that it may be used in a variety of daily situations; regardless of whether the locus is internal or external, it will, by definition, have an impact on your mind, body, and even behaviours.

A flow experience is produced when the skill requirements and task demands of a certain activity are compatible. This makes the activity pleasant. It was found (Keller & Blomann, 2008) that participants with a strong internal locus of control (LOC) were most sensitive to the manipulation of skills-demands compatibility and experienced flow under conditions of a fit of skills and task demands, whereas people with a weak internal LOC did not enter the state of

flow. The study used an experimental paradigm to document the causal impact of skills-demands compatibility on the emergence of flow.

1.1.8 Goal Orientation:

Students' motivations for exhibiting distinct accomplishment behaviours in a given circumstance are referred to as goal orientation. To learn (a mastery orientation), do better than others (a performance-approach orientation), or avoid failure (a performance-avoidance orientation) are some of these motives. To put it another way, a task-oriented person will feel empowered to meet the challenge of the task, to have clear goals, to enjoy participation, and to receive quick, clear feedback on their level of performance.

The concept of goal orientation describes how someone interprets and responds to tasks, leading to various patterns of cognition, affect, and behaviour. The orientation goal theory, which was developed within a social-cognitive framework, contends that it is possible to comprehend students' motivation and achievement-related behaviours by taking into account the motivations or purposes they adopt when working on academic tasks. The emphasis is on the way in which students approach themselves, their assignments, and their performance. It has been demonstrated that goal orientations are related to people's academic success, adaptability, and wellbeing. A study's (Stavrou, Psychountaki, Georgiadis et al.,2015) findings suggested that athletes' task orientation may be a key element in achieving flow in competitive sport, feeling more skilled, and perceiving the upcoming competition as challenging, whereas low ego and low task oriented athletes lack these elements, which are crucial for them to enter flow. Additionally, the balance between an athlete's goal orientation preferences appears to be more significant for the development of flow than the amount of task and ego orientation per se, suggesting that high task - high ego and high task - low ego athletes are experiencing the most happy mental states.

A greater understanding of the appearance of flow experiences has been established through significant advancements in flow theory research. The personal components, state features, and psychosocial mechanisms associated with flow experiences have been the focus of research (Kimiecik & Stein, 1992; Jackson, 1995; Jackson et al., 1998). Although there haven't been many research studying the relationship between goal orientations and flow, theoretical arguments suggest that the two concepts may be related (Csikszentmihalyi, 1988; Jackson & Roberts, 1992; Jackson & Csikszentmihalyi, 1999).

1.1.9 Family Environment:

The conditions and social climate within families are considered to be part of the family environment. Every family environment is distinct since every family is made up of various people in a variety of settings. The settings might vary in a wide range of ways.

A comparatively less talked about factor affecting the work related flow state is Family environment. A positive family environment helps in better focus at work, whereas a negative family environment would serve as a distracting factor during work.

1.1.10 Work Environment:

A short-term peak experience known as "flow" at work is one that is marked by absorption, work enjoyment, and intrinsic motivation and is favourably correlated with a number of performance measures. Top athletes, artists, and highly competent employees have been found to exhibit flow experiences in previous research (Csikszentmihalyi 1975; Moneta 2012). According to a work-related article (Bakker & Woerkom, 2017), all employees can achieve flow through proactive individual techniques like self-leadership, job making, playful work design, and the use of their skills. It provided a brief survey of the literature on flow at work before arguing, using the self-determination theory, that workers may actively control their own flow experiences

rather than simply reacting to their working environment. They put forth a model of work-related flow that also highlights human resource (HR) practises, leadership, the work context, and personal resources as potential moderators of the interaction between self-determination methods and flow.

1.1.11 Demographic Details

Certain demographic information was also taken into account when analysing the variables impacting flow. Gender, Length of practice, and Area of Practice. Studies on flow from the past (Garcia, Mizoguchi, Nascimento et al., 2019) suggest that flow varies depending on gender and amount of practise. According to (Sinnamon, Moran & O'Connell, 2012), experience at work is also seen to assist people reach flow more quickly. Women are also thought to experience greater flow than men do. A few demographic factors, including gender, length of practise, and area of practise, are taken into account to research their impact on Work-flow state based on the findings of prior studies. Because it centres on the primary idea of experience, length of practise can affect flow. With practise, a person becomes more adept at doing the activity at hand, and as a result, the flow criterion of a balance between challenge and skill is met.

1.2 Rationale, Objectives, and Hypothesis

When someone is in Work-flow state, they are at the top of their game and giving it their all. Doctors have demanding careers that demand this level of concentration on a regular basis. This study focuses on the variables that influence doctors' work-flow states. The majority of the literature in this field relates to musicians (Sinnamon, Moran, & O'Connell, 2012), athletes (Garcia, Mizoguchi, Nascimento et al., 2019), and other non-medical professions. Studies examining the work-flow state in doctors are scant to nonexistent. According to the literature that

is currently available, elements including the length of practise, the area of practise, the gender, the home and work environments, the goals, the feedback, and the locus of control all have a significant impact on the work-flow state of doctors. The current study was conducted utilising a mixed-method design in order to thoroughly examine all these variables. The other components impacting work-flow state were analysed in this study using Braun and Clarke's thematic analysis, while the personality component was assessed using a quantitative questionnaire.

The following hypotheses were studied:

- There will be a significant variance of “Openness”, “Conscientiousness”, “Extraversion”, “Agreeableness”, and “Neuroticism” in the Work-Related Flow state among the Medical Professionals.
- There will be significant differences between male and female medical professionals in the work-flow state.
- There will be significant differences between medical professionals based on length of practice.

Chapter 2

Methodology

2.1 Sample :

A sample of 100 doctors who had completed their MBBS/ MD degrees was taken. The sample consisted of 50 Females and 50 Males who had been practicing medicine for at least 1 year.

A sample of 14 doctors was taken for Qualitative analysis.

2.2 Design :

The research followed a convergent design where personality and demographic details were collected using quantitative design and other factors influencing flow was observed using Qualitative design. The qualitative design was carried out using Braun and Clark Thematic Analysis design.

2.3 Tools

1.) **Demographic Details** of all the participants were collected. Their Age, Gender, Area of practice, duration of pratice and email id were collected.

2.) **The Big 5 Inventory** was developed by John O.P. and Srivastava S. (1999). It consisted of a total of 44 questions which were rated by Participants on a 5-point scale ranging from 1 (disagree strongly) to 5 (agree strongly).

3.) **Work-related Flow Inventory Construct** was developed by Arnold B. Bakker (2007). It is a 13 item scale where each question was rated on a 7-point scale ranging from 1 (never) to 7 (always).

4.) **Semi - Structured Interview** was developed keeping the theory of Flow by Csikszentmihalyi into consideration along with the Work-related Flow inventory by Arnold B. Baker. The questionnaire consisted of 9 Questions with sub parts.

2.4 Procedure

The personality survey was conducted online by filling up questionnaires through google forms and offline distribution of forms. The participants were requested to be seated in a quiet atmosphere while filling up the questionnaires. They were told to fill up a questionnaire which had questions about demographic details, informed consent, Big 5 Inventory and Work related Flow state inventory. They were asked to read the instructions given on the top of the questionnaire carefully and answer the questions with the first response that came to their mind. They were told that no response was right or wrong and that the responses given by them would be kept confidential and will be used only for research purposes. After filling up all the questionnaires they were asked to submit their responses.

After all the responses were collected, the scoring was done in accordance with the inventories and analysis was done using SPSS software 21.0. In statistical Analysis, Multiple Regression Model was used.

The Qualitative interviews were conducted offline or telephonically, according to the preference of the participants. The participants were informed about the guidelines and they were aware that the interviews were audio recorded. They were asked to answer all the questions as honestly as possible and were also asked to include some examples from their lives. The participants were told that the interviews would be kept confidential and will be used only for research purposes. After getting their verbal consent, the interview was started.

2.5 Statistical Analyses

The Quantitative data analysis was done using Statistical Package for Social Science (SPSS-21.0). The descriptive statistics (mean and stand. deviation), Multiple Regression, t-test

Qualitative Analysis

The Qualitative data analysis was done using QDA Miner Lite Software, using Thematic Analysis (Braun & Clark)

Chapter 3

Results

For the Quantitative data analyses, the mean and standard deviation was computed for all the variables. Flow was taken as the dependent variable. Independent variables were Openness to experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Correlation and multiple regression were also computed using SPSS 22.0 software.

Table 1: Descriptive Statistics

	Min value	Max Value	N	Mean	Sd
Flow	13	90	100	71.87	10.06

(M- Mean ; SD- Standard deviation)

Table 1 shows Minimum Score, Maximum score, Mean and Standard Deviation of Medical Professionals on Work - Related Flow. There were 100 participants in total (50 males and 50 females). The mean and standard deviation score on flow came out to be 71.87 and 10.067 respectively, which means that the flow level of participants was higher given that the higher they score the higher the flow.

Table 2: Descriptive statistics - Personality

	Min value	Max Value	N	Mean	Sd
Openness	10	50	100	31.7	5.9
Extraversion	10	50	100	26.21	4.7

Conscientiousness	10	50	100	30.25	5.5
Agreeableness	10	50	100	34.57	4.7
Neuroticism	10	50	100	24.3	5

(M- Mean ; SD- Standard deviation)

Table 2 shows Minimum Score, Maximum score, Mean and Standard Deviation of Medical Professionals on Openness to Experience, Extraversion, Conscientiousness, Agreeableness and Neuroticism. There were 100 participants in total (50 males and 50 females). For openness, the mean and standard deviation score came out to be 31.7 and 5.9 respectively, which means that the participants experience moderate openness to experience. For extraversion, Mean and standard deviation scores came out to be 26.21 and 4.7 respectively, which means that the participants experience moderate levels of extraversion. For agreeabless the mean and standard deviation scores came out to be 34.57 and 4.7, which means that the participants experience moderate level of agreeableness. For neuroticism, mean and standard deviation scores came out to be 24.3 and 5 respectively, which means that the participants experience low level of neuroticism.

Table 3: Regression Model

R	R square	Adjusted R Square	Std. Error	F	Significance
0.21	0.046	0.037	9.88	4.76	0.03
Variables	beta value	std. error	t-value	significance	

(constant)	51.05	9.58	5.32	0.001
Personality	0.14	0.065	2.18	0.03

Table 3 shows the regression model. The coefficient of determination, i.e., the R^2 value is 0.14, indicating that in terms of personality 14% of personality is contributing to flow. The significance value indicates that the regression model is significant.

Table 4: T-test Table

	Max Value	t	df	Sd
Gender	Equal variance assumed	.346	98	.730
	Equal variance is not assumed	.346	85.293	.730
LOP	Equal variance assumed	.729	65	.468
	Equal variance is not assumed	.747	31.802	.460

(LOP - Length of Practice)

Table 4 shows the t-test table. This table indicates that gender and Length of Practice are not significant in relation to Work-flow state.

Table 5: Thematic Analysis Table

	% Codes	Cases	% Cases
Features of Flow State			
Involved in task	4.3%	8	57.1%
Loss Track of time	4.9%	13	92.9%
Enjoyment of work/task at hand	5.2%	12	85.7%
Feedback	3.6%	12	85.7%
Goals	5.5%	13	92.9%
Satisfaction from Work	10.3%	14	100.0%
Balance between Challenge and skills	4.9%	10	71.4%
Feeling of control	3.3%	9	64.3%
Factors influencing work-flow state			
Family Environment	14.3%	14	100.0%
Work Environment	10.3%	14	100.0%
Decision to take the task at hand	6.7%	14	100.0%
Character strengths	8.2%	14	100.0%
Challenges to Work-flow state			
Family Challenges	5.2%	10	71.4%
Challenges at work	12.2%	14	100.0%

Other Challenges	1.2%	3	21.4%

Table 5 shows the thematic analysis. The first theme involves the subthemes headed as involved in task which is seen in 57.1% of cases, indicating that it significantly contributes to the work-flow state, Loss of track of time seen in 92.9% of cases as a key feature of Work-flow state, Enjoyment of work?task at hand seen in 85.7% of the cases which also highly contributes to the Work-flow state of medical professionals, feedback seen in 85.7% of the cases which is an important feature of Work-flow state, goals seen in 92.9% of cases, satisfaction from work seen in 100% of the cases indicating that all the medical professionals have a sense of intrinsic satisfaction from their job, balance between challenge and skills seen in 71.4% of the cases, and finally feeling of control at 64.3% of cases. The second theme talks about the factors influencing work-flow state. The subthemes, family environment seen in 100% of cases indicate that a positive family environment has significantly contributed towards work-flow state in doctors, work environment seen in 100% of cases also heavily influences the work-flow state, decision to take the task at hand which is seen in 100% of cases showcases the importance of events that influenced the medical professionals to take the decision of becoming a doctor and character strengths seen in 100% of the cases, showcase the influence of these factors in work-flow state. The third theme showcases the challenges to work flow state. The subthemes, family challenges seen in 71.4% of cases, challenges at work seen in 100% of cases and other challenges discussed in 21.4% of cases, individually focus on these factors which also play a significant role in influencing Work-flow state.

According to Braun and Clarke (2006), there were various stages to the thematic analysis. "Familiarising oneself with the data" is the first step. This entails reading and transcribing the

data. In the second phase, "generating initial codes" was involved. The "searching for themes" phase is the third. Going through each code and gathering pertinent codes to create themes entails doing this. The fourth phase, known as "reviewing the themes," is going over the codes and the complete data set once more to see how they relate to the themes. "Defining and naming themes" is the fifth phase. This suggests that these ideas should be clarified, given distinct labels, and presented for examination. "Producing the report" is the sixth stage, which entails writing the report and conducting the last theme analysis.

Table 6: Result Table

Theme	Code	Description	Extracts
Features of Work-Flow State	Involved in task	Engrossed, high concentration, avoiding any distractions	
	Loss of track of time		
	Enjoyment of Work/ task at hand	Ease and effortlessness to do the work	
	Positive feedback	Feedback to others on this profession	
	Goals	The motivating factor, clarity of goals	

	Satisfaction from work	is Intrinsically rewarding, the motivating factor	
	A balance between challenge and skills	Have the required skills, access to skills for performing the task	
	Feeling of control	Authoritative feeling over the task, the feeling of leading the task, leadership qualities	
Factors that influence work- flow state	Family environment	Positive family environment contributes to flow and negative environment takes away from it	
	Work environment	Positive work environment contributes to flow and a negative work environment takes away from it, the role of support staff and	

		colleagues	
	Decision to take the task at hand	Motivation to start the task	
	Character Strengths	Neuroticism, Extraversion, Agreeableness, and Conscientiousness	
Challenges to Work-Flow State	Challenges at work	Dealing with stressful conditions at work	
	Family challenges and problems	Problems/occasional challenges in family environment	
	Other Challenges	Apart from Family and Work challenges, there are some more intrinsic challenges faced by an individual based on their personality.	

Chapter 4

Discussion

The present Research Study is Titled “Investigation of Work-Flow State Among Medical Professionals”. The study had two parts. First being the Quantitative followed by the Qualitative.

4.1 QUANTITATIVE

Table 1 showed Minimum Score, Maximum score, Mean and Standard Deviation of Medical Professionals on Work - Related Flow. There were 100 participants in total (50 males and 50 females). The mean and standard deviation score on flow came out to be 71.87 and 10.067 respectively. Here, as the mean value 71.87 was significantly in between the minimum and the maximum score i.e, 90 which indicated that the flow level of participants was average given that the higher they score the higher the flow. This score indicates that in the given sample, the participants have average performance on their activities.

Table 2 showed Minimum Score, Maximum score, Mean and Standard Deviation of Medical Professionals on Openness to Experience, Extraversion, Conscientiousness, Agreeableness and Neuroticism. For openness, the mean and standard deviation score came out to be 31.7 and 5.9 respectively, which means that the more realistic and responsible indviduals experience moderate openness to experience, i.e For extraversion, Mean and standard deviation scores came out to be 26.21 and 4.7 respectively, which means that the participants experience moderate levels of extraversion. For agreeabless the mean and standard deviation scores came out to be 34.57 and 4.7, which means that the participants experiencing moderate level of agreeableness would indicate some concern with other’s need but mostly focus on their own needs. For neuroticism,

mean and standard deviation scores came out to be 24.3 and 5 respectively, which means that the participants experiencing low level of neuroticism would be more emotionally stable and less reactive to stress.

Table 3 showed the Regression Model. The coefficient of determination, i.e., the R^2 value is 0.14, indicating that in terms of personality 14% of personality is contributing to flow. The beta value came out to be 0.21 which indicates that for every 1 unit of increase in personality, there would be a 21 unit of change in Flow. Given the positive relationship, the change will be positive, ie. it will increase. The significance value of 0.03 indicates that the regression model is significant.

4.2 QUALITATIVE

The Thematic analysis for the current study was done using Braun and Clarke's Thematic Analysis method (Aghdam . A. R, Watson J., Cliff C., Miah S.J., 2020).

Theme 1: Features of Work-Flow State

Getting into a flow state at work is among the most satisfying activities to perform. When a person becomes absorbed in a task or project at work that they lose track of time, it is when they are in flow. As they finish a project, they might not even be aware of how much time has passed. This is flow.

Sub-theme 1: Involved in task

As one continues to concentrate on their work while in a flow state, their brain will automatically block off distractions. Distractions, though, can keep one from obtaining the mental clarity

required for flow state when one is in the flow. As described by PP3SS - *"i was there in my OPD because light had went out and all my room was filled with pregnant patients and all and i was sweating and i was working because a lot of rush was there and still had many patients to attend, and he came to my room himself and he said that my this, give my this doctor class 4, the patients are all over her, she is unable to do work properly and then i was given an AC room and i appreciate his concern and my SMO's concern so that i was able to attend patients properly".*

Subtheme 2: Loss of track of time

When a person is in flow, the activity seems to engulf them. This causes a kind of altered state of consciousness centred on time. It can either speed up or slow down, but either way, when they look at the clock, they're a little taken aback. Being totally engrossed in the present moment causes time to change in this way. As described by PP5MG - *"Yes, yes, yes it happens very frequently when there is a medical emergency and I get a lot of suturing to be done, we have to do the prep with wearing like gloves and masks, so we are totally lacking the track of time at that moment. It's like we are so much into something and when the task is finished, then we realise that oh my god, time has actually passed".*

Subtheme 3: Enjoyment of work/task at hand

Similar to not forcing it, if one's not having fun, one won't be able to enter flow state. Doing something one enjoys if they're not sure where to begin. Intrinsic motivation, not extrinsic incentive, is the foundation of flow state. When one is motivated by intrinsic factors, one is not necessarily motivated by the prospect of rewards. The flow status is the same. One enjoys flow states because they make it enjoyable to complete tasks. PP1R - *"I enjoy my profession."*

Subtheme 4: Positive feedback

Positive reinforcement magnifies or amplifies the change or result. The reaction effect is accelerated so that it can happen much more quickly. The system's output is improved by this type of feedback. Positive feedback, on the other hand, inhibits or reduces production. PP1R - *"recommend others also to follow this noble profession"*

Subtheme 5: Goals

A clear set of goals is another essential component of flow state. It's simpler to experience flow when one is aware of what needs to be done. That's because having specific objectives makes it easier to gauge the progress on the current project. PP5MG - *" I am looking forward to go into my favourite branch that is pediatrics, I basically want to pursue my post graduation in pediatrics and I want to go for research in pediatrics medicine and the and I also want to gain knowledge in medicine so it will help me in both knowledge as well as my working environment moving forward. I am very fond of children. So, i guess this will accomplish both knowledge and my work environment will also be set accordingly to my interest."*

Subtheme 6: Satisfaction from work

The difference between the positive career elements that make one feel valued or give a sense of purpose and the negative career elements, such as long hours or unpleasant jobs, or feeling devalued as an employee, determines the level of job satisfaction. PP5MG - *" as long as I am in this line it is very satisfactory when you treat the patient and when you get someone's blessing like it's beyond words and you feel very very good and proud as well that I chose the right field for me"*

Subtheme 7: A balance between challenge and skill

When challenge and skill are balanced, flow state is possible. It's difficult to get into the flow when something is too difficult because one is probably anxious about finishing it. If something isn't difficult enough, one will likely get bored, which isn't good for flow state. This is referred to in flow state as the "challenge-skill balance." PP4S - *" I will say that I have conducted more than 50 normal vaginal deliveries on my own. So I take it as a credit to myself."*

Subtheme 8: Feeling of control

The sensation of having greater control over one's activities is a hallmark of flow. 'Control' is a word that is frequently misinterpreted. Due to its associations with anxious attention or compulsive dominance, it can turn off a lot of individuals. Control in a flow lacks all of these characteristics. In Zen Buddhism, this paradox is referred to as "control without controlling" and is characterised by a sense of security and relaxation with an utter absence of stress. PP3SS - *" I never cared for it. I always finished entire OPD, sorting out every patient."*

Theme 2: Factors that influence work-Flow State

There are more aspects of the work-flow state that influence it in addition to the ones just listed. These elements primarily have to do with one's environment and personality traits, which are not always within one's control.

Subtheme 1: Family Environment

The family environment has a significant impact on how the work-flow state is affected. While a negative family atmosphere increases distractions and detracts from concentrate on the task at

hand, a happy environment positively improves Work-Flow by avoiding unwanted thoughts and distractions. A supportive family atmosphere serves as a safety net when facing difficulties. PP1R - *"My father he was my biggest support. He always said, dental or a mental, become a doctor. So, he was factor, a big factor, uh to promote me to pursue, which kind of was a big encouragement. my parents were very very pushing, my mother and my father were very very dedicated and uh, gave utmost importance to studies.there was no pressure, but at the same time cooperation from parents was always there. my husband is very supportive. I did my post graduation after my two children. So, he was a big support. With two children, I kind of communicated between Chandigarh and Patiala. And, my son was one year old when i did my post graduation. So, i've always struggled and worked hard. It was only by the family's cooperation i could achieve this status."*

Subtheme 2: Work Environment

Work environment, a short-term peak experience known as "flow" at work is one that is marked by absorption, work enjoyment, and intrinsic motivation and is favorably correlated with a number of performance measures. PP4S - *"my colleagues are pretty supportive as well, all my seniors are supportive and then in any case when I need to, I called them up and I say can you please replace me today with somebody else and then the re-schedule the thing, yeah."*

Subtheme 3: Decision to take the task at hand

The choice to accept the given assignment is crucial to the experience of the work-flow stage. Enjoyment of the task, which results from acceptance of the task, which results from the decision to accept the task, is a key factor in experiencing the Work-Flow state, as was previously addressed in the Features of Work-Flow State section. PP4S - *"I always believed that from doing*

something for myself. I have always felt better when I serve the others. I wanted to get into this profession because I felt that this is the most noble profession that I can touch lives of people on daily basis."

Subtheme 4: Character Strengths

Characteristics have a significant impact on flow state. Leadership, honesty, and empathy are qualities that help people perform better in medical profession. PP3SS - *" I define myself as a very honest, hard working,devoted, dedicated doctor. i was able to do such hard work which was which is attached to design of gynaecology and statics. And i was i think without that passion and hard work no one can do his or her own responsibility as gynaecologist. And i suppose that i am myself is an example to my son, he says that honesty and hardwork, i've learnt from you mom. That's all."*

Theme 3: Challenges to Work-Flow State

There are several challenges that have an impact on it as well, much as the elements that affect the work-flow state.

Subtheme 1: Challenges at Work

When it comes to the workplace, there are some factors like support staff behavior, the atmosphere, the facilities, the number of employees, etc. that may increase the challenges of the task itself and affect the flow state. PP3SS - *" in this environment i feel like, i don't think i should*

say, but somewhere the , either the people here don't work or they don't want to work or their calibur only is not there, who have gotten job here."

Subtheme 2: Family challenges and problems

Family challenges add to distractions at work. PP1R - *"Challenges, definitely are there. This profession demands a lot of time and a lot of you know, self-devotion.when your family environment is good and happy and people are supportive, you do come out of it"*

Subtheme 3: Other challenges

Apart from family and work challenges there are some other challenges that an individual goes through. These challenges may be related to anything. PP6K - *"I'm very dominating person in this respect. Even if we are doing a group activity or anything, or I distribute any work after five minutes, I would say, no, you're doing it wrong. I'll do it myself. Like that, I'm a little dominating person. It helps me because I can work very fast and wind up very quickly. But sometimes it might hurt someone also. If you are over dominating or anything, you are not liking someone's work, but they are giving their best. So, like that. I need to improve."*

Chapter 5

Conclusion

The present study aimed to find all the factors that affect Work-Flow State in doctors. In the study we hypothesized that there will be a significant variance of Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism, gender, length of practice, work environment, family environment, goals, feedback, satisfaction from work, character strengths, family challenges and challenges at work in the Work-Related Flow state among the Medical Professionals. After analyzing the data, the hypotheses was partially accepted. Results from 100 respondents revealed that Agreeableness is significantly contributing to Flow, and extroversion, conscientiousness, neuroticism and openness are not contributing towards flow. In terms of personality 14% of personality is contributing to flow. In addition to it, gender and length of practice were not contributing to work-flow state. Finally, Family environment, work environment, challenges at work and satisfaction from work were found to be the main influencers of work-flow state.

5.1 Implication :

The current study shows that in personality Agreeableness contributes to Work-related flow. In other factors influencing flow state, Family environment has had the most affect. Hence the importance of Agreeableness in achieving Flow can be seen from the findings. Further, the result also showed that extroversion, conscientiousness, neuroticism and openness are not contributing towards flow. The implication of this study is that to achieve the state of flow in doctors attentional focus needs to be consistent. The doctors also need to be specialised their fields, i,e, have complete and detail knowledge of their work so that their skill level complements their challenges. They need to perform goal-oriented activities, be it the satisfaction attained at the

completion of task, or monetary benefit, or emotional staisfaction, etc. They need to be constantly reminded that they are doing well, i.e some sort of feedback is needed. Also, Intrinsic motivation to perform the task and put efforts is required. Lastly, multi-tasking should be avoided, i,e, the focus should lay on Task-at-hand.

5.2 Limitations and Future Suggestions

The sample size for the current study was very limited in number. These results cannot be generalized to the populations of Eastern and Asian countries, specifically India. Future researchers need to conduct the study on larger Sample size and focus more on people living in different parts of India.

Chapter 6

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Appendix A

Big 5 Inventory

Here are a number of characteristics that may or may not apply to you. For example, do you agree that you are someone who likes to spend time with others? Please write a number next to each statement to indicate the extent to which you agree or disagree with that statement.

Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree Strongly
1	2	3	4	5

I see Myself as Someone Who... ____

1. Is talkative ____

2. Tends to find fault with others ____

3. Does a thorough job ____

4. Is depressed, blue ____

5. Is original, comes up with new ideas ____

6. Is reserved ____

7. Is helpful and unselfish with others ____

8. Can be somewhat careless ____

9. Is relaxed, handles stress well ____

10. Is curious about many different things ____

11. Is full of energy ____

12. Starts quarrels with others ____

13. Is a reliable worker ____

14. Can be tense ____

15. Is ingenious, a deep thinker ____

16. Generates a lot of enthusiasm ____

17. Has a forgiving nature ____

18. Tends to be disorganized ____

19. Worries a lot ____

20. Has an active imagination ____

21. Tends to be quiet ____

23. Tends to be lazy ____

22. Is generally trusting ____

24. Is emotionally stable, not easily upset ____

25. Is inventive ____

26. Has an assertive personality ____

27. Can be cold and aloof ____

28. Perseveres until the task is finished ____

29. Can be moody ____

30. Values artistic, aesthetic experiences ____

31. Is sometimes shy, inhibited ____

32. Is considerate and kind to almost everyone ____

33. Does things efficiently ____

34. Remains calm in tense situations ____

35. Prefers work that is routine ____

36. Is outgoing, sociable ____

37. Is sometimes rude to others ____

38. Makes plans and follows through with them ____

39. Gets nervous easily ____

40. Likes to reflect, play with ideas ____

41. Has few artistic interests ____

42. Likes to cooperate with others ____

43. Is easily distracted ____

44. Is sophisticated in art, music, or literature ____

Scoring: BFI scale scoring ("R" denotes reverse-scored items): Extraversion: 1, 6R, 11, 16, 21R, 26, 31R, 36 Agreeableness: 2R, 7, 12R, 17, 22, 27R, 32, 37R, 42 Conscientiousness: 3, 8R, 13, 18R, 23R, 28, 33, 38, 43R Neuroticism: 4, 9R, 14, 19, 24R, 29, 34R, 39 Openness: 5, 10, 15, 20, 25, 30, 35R, 40, 41R, 44

Appendix B

Work-Related Flow Inventory

The following statements refer to the way in which you experienced your work during the last two weeks.

Please indicate how often you experienced each of the statements. (1 = never, 2 = almost never, 3 = sometimes, 4 = regularly, 5 = often, 6 = very often, 7 = always).

Absorption

1. When I am working, I think about nothing else

2. I get carried away by my work

3. When I am working, I forget everything else around me

4. I am totally immersed in my work

Work Enjoyment

5. My work gives me a good feeling

6. I do my work with a lot of enjoyment

7. I feel happy during my work

8. I feel cheerful when I am working

Intrinsic Work Motivation

9. I would still do this work, even if I received less pay

10. I find that I also want to work in my free time

11. I work because I enjoy it

12. When I am working on something, I am doing it for myself

13. I get my motivation from the work itself, and not from the reward for it

Appendix C

Qualitative Questionnaire

Good afternoon Doctor.

Welcome to our interview session. I hope you have read our guidelines and are feeling comfortable. As you are aware, we will be audio recording this interview. I will be asking you a few questions, and you are requested to answer those questions as honestly as possible. Please feel free to skip any question that makes you uncomfortable. Shall we begin?

Q1. Please tell us something about yourself/ How would you describe yourself?

- Accomplishments you are particularly proud of?
- How do your personality strengths, or characteristics help you at work? Please elaborate with examples)
- Wisdom, Courage, Leadership, Forgiveness, modesty,

Q2. When did you decide to become a doctor? (/How did you decide to become a doctor?)

- Do you enjoy working with patients? How often? What are the reasons?
- Do you feel you lost track of time while working with the patients? How and Why?

Q3. May you please talk a bit about your family?

- Who are there in your family?
- How did they react to you becoming a doctor?
- Can you talk briefly about the family environment you experienced when you started your practice?
- How is it different from your current family environment? How does family contribute to and help you in continuing your medical profession?

- How often are you affected by family problems/challenges while working? Do these events interfere with your work? OR Do these events affect your attention during work?

Q4. As a doctor, do you feel your profession is challenging? How and why?

- At times, you might be dealing with many patients (multi-tasking). Does this affect your focus or concentration at work?
- Internal & External locus of control (At times of challenges, from where do you seek support?)

Q5. Can you please talk a bit about the work environment?

- How does your work environment affect your focus?
- Role of support staff and colleagues
- Provision of on-job training
- Availability of feedback on performance

Q6. How do you maintain a work-life balance?

- What is the role of the work environment in this case?
- What more can your hospital or government do to create this balance and help you engage more with your work?

Q7. What keeps you motivated to work in this field, Please elaborate with examples.

- Can you explain some of your life goals that help you keep motivated in your career

Q8. Can you mention the thing/things that specifically contribute to better productivity at your job?

Q9. How do you track your performance at work/progress at work?