To Analyse The Work-To-Family Conflicts (WFC) Experienced By The Police Personnel Of Tamil Nadu By Using The Fuzzy TOPSIS Decision Making Method

S. Sarala[1] *, T. Johnson[2]

[1,][*] [2]Department of Mathematics, Dr. MGR Educational and Research Institute
University, Chennai, Tamilnadu, India
E-mail: [1]sarala.math@drmgrdu.ac.in, [2]johnson.math@drmgrdu.ac.in

ARTICLE INFO	ABSTRACT
	The primary aim of this study is to analyse the physical and mental stress experienced by police personnel due to work-family conflict (WFC) resulting from the nature of their work. Work is fundamental and essential to all cultures, even though it differs widely within and between them. WFC occurs when the work domain encroaches on the family domain of police officers, leading to a detachment from their jobs and the police organization. Police officers face various work-related conflicts, including long hours, work overload, extensive travel, and strained peer relationships. The research problem aims to identify meaningful solutions to the work-family conflict experienced by Tamil Nadu Police personnel. Based on expert opinions, major factors affecting work-family conflict among police personnel are categorized into five criteria. Additionally, three alternatives have been identified to find possible remedial measures for the problem by applying the Fuzzy TOPSIS method. **Keywords:** Work-family conflict, Police personnel, Family wellness, physical and mental fitness, Fuzzy TOPSIS.

Literature Review:

Dr. Pinki et al., (2020) have discussed and analysed the police constable's work conflict by collecting the data from 300 police constables (an equal number of males and females) in the age range of 25 to 40 years utilizing a random sampling technique. This study is to findings of the study reveals that male police constables have better stress management than female police constables. Cátia Sousa et al., (2020) have looked at how work-family conflict (WFC) and family-work conflict (FWC) affect work-family guilt (WFG) and family-work guilt (FWG). In a group of 213 people aged 22 to 64 years (M = 41.77; SD = 6.63), the findings demonstrate that, contrary to predictions. This study looked at a paradigm in which higher levels of WFC and FWC were projected to in result a negative impact on WFG and FWG, respectively, and so lower life and job satisfaction. Ellen Ernst Kossek et al., (2017) have examined a variety of theoretical viewpoints to better understand work-life conflict, beginning with role theory and on to conservation of resources, job demands and resources, and life course theory. Norwaziah Mahmud et al., (2018) have analysed of three decision-makers is necessary to evaluate the elements using linguistic variables ranging from very bad to very good'. After using fuzzy TOPSIS, the components are sorted, and the findings suggest that a lack of education is the most significant factor contributing to criminal conduct, with a proximity coefficient value of 0.4661. Poverty is the least significant contributing factor, with a closeness coefficient of 0.3632. Mahalakshmi et al., (2014) evaluated the findings to determine the association between burnout and work-family conflict among police officers. A total of 450 police officers, comprising 379 males and 71 women, were contacted and given questionnaires. Non-probability convenience sampling methods were utilised. This study discovered that burnout among police officers leads to work-family conflict and family-work conflict. They're emotionally drained and depersonalised. Work-related stress for police officers had an impact on their personal lives. Neelima B. Kore et al., (2017) have analysed the multi-criteria decision-making Fuzzy TOPSIS approach has been examined to determine the optimum way for obtaining an optimal answer among comparable possibilities. In this study, Fuzzy TOPSIS is a method that incorporates data in any form, such as numerical or linguistic. After collecting data and

converting it to Fuzzy system mode, it decreases the possibility of mistakes produced by units of parameters, which also cause issues with mathematical calculations.

Introduction:

Work is fundamental and essential to all cultures, despite the fact that it differs widely both within and between them. It can range from manual resource harvesting to operating complex machinery that allows many people to replace their physical or even mental labour. High levels of work-family conflict leads to negative personal outcomes like poor health, anxiety, depression and life dissatisfaction. Relationship-wise, there is an increase in marital discontent, divorce, and interpersonal conflict.

WFC occurs when experiences and obligations, such as extended travel, department transitions, unsupportive supervisors or organisations, work overload and other types of job stress, long, irregular, or inflexible work hours, interpersonal conflict at work, both the mental and physical activities they engage in at work. People's experiences and obligations, such as having young children, being the primary carer for them, having to take care of the elderly, and having interpersonal conflicts within the family, can also lead to work conflicts and interfere with family life.

Work-to family conflict (WFC) of police personnel:

WFC happens when work domain invading their family domain of the police officers which results to lose attachment to their jobs and the police organisation. Since police officers deal with a variety of conflicts at work, including long hours, work overload, lengthy travel, and strained peer relationships. Work-to-family conflicts lead to many obligations, which are not interacting with the family members, particularly when it comes to taking care of the elderly and children. Police force is a unique and distinct profession, which rarely studied & surveyed for the research purpose. Their jobs are not only hazardous and challenging, but their hours are also unpredictable. Having these job characteristics will greatly influence their ability to fulfil the obligations as a family member.

Further, we will explore the primary reasons that generate WFC conflicts of the police personnel due to their work nature.

Factors play a primary & vital role in Work - Family Conflict of the Police personnel:
• Time spent with family (C1)
• Community Expectations and Demands (C2)
• Caring for Elderly/Children (C3)
• Disruption of Family Life Due to Rotating Shifts (C4)
• Personality Change at work impacts Family Relationship (C5)

Time spent with family (C1)
Police personnel have a range of responsibilities both at work and in their personal lives. Their professional duties often create difficulties that can spill over into their family life and parenting responsibilities. For instance, children may feel upset when their parents come home after a long and stressful day. Additionally, job burnout is a common challenge, where the stress of one job can affect other areas of life. Police officers, in particular, may struggle to separate their professional and personal lives. They may be more selective about where they live and work, especially when raising children. Another issue is the discomfort that police personnel may feel in their daily activities due to their public responsibilities..

Community Expectations and Demands (C2)
It can be difficult for police officers to participate in family activities due to the nature of their work. This can be especially challenging when it comes to attending family weddings and religious gatherings as they may not be able to take time off work. Often, their spouse or partner may have to attend these events alone. This situation affects both genders, but women are predominantly affected. It can also be difficult for police officers to take time off work during festivals, which can lead their children to believe that their parents are not interested in spending time with the family. This type of conflict mostly affected those working as home guards, VIP escorts, and involved in traffic signals during festival seasons.

Caring of Elders/Children (C3)
Each individual human has responsibility to take care of their parent and children in their lifetime. The police personnel are unable to do their accountable work as usual as others. Because of their work nature and due to lack of time they could not able to assist children's academic and other activities. For example, unable to attend children's PTA Meetings for their academic results, during the occasion the Graduation function and specifically Children's requires assistance from the parents to avoid difficulties of transportation in pursuing their extra-curricular activities such as Martial arts, sports, music etc. Children are depressed because they are unable to spend quality time with their father/mother due to time constraints. At the situation of the working spouse, Children's are left alone or somewhere else when there is no one to take care at home are nearby

relatives. This is easier if your spouse works during the day and is responsible for picking up the kids from school. Relatives must live nearby and be able to provide care when needed. This makes it less complicated to find someone to fill in when a work role conflicts with a parenting role. If the police accompany the parents, they will be helpless to assist them with a medical emergency or take them to the hospital.

Disruption of Family Life Due to Rotating Shifts (C4)

As a result, some police officers are stressed because they do not know when their shift will end. The husband and wife had more disagreements because of the numerous transfers and work demands. It affects both genders as well as the partner who is not working. Stress experienced by spouses is cause for concern because a stressful home environment can harm police officers. Even if the police are not bothered by the settings, scenarios, or incidents, shift work or undercover operations can cause serious issues for their families. Concerns about the spouse's criticism, need to be in control at home and worrying about being able or not being able to express emotions. Because families experience stress, they are often the first to recognize the need for police and help, and can play an important role in encouraging them to seek help before problems get worse.

Personality Change at work impacts Family Relationship (C5)

The change of a work environment of an individual person will be specifically be specifically affects the family and their relationship. How and where people work, as well as how the work environment affects them, will have a direct impact on the individual. At home, families see their officers experiencing emotional detachment, chronic irritability, chronic fatigue and social isolation.

More often, the spouse and children do not understand why their officers experience these behavioural changes. Everyone reacts to the impact of his or her job, but here it is expect to be more. Because these people work in the public, they must work directly with their hands and not with machines. On the other hand, there is a need to pay attention to the fact that the police are also members of the same society and are people; they, also, need to live and stay with their families, but they do not have enough time. Repeated transfers in their careers have affected many police officers because it is not machine work to adopt immediately they are interacting directly with the public. So, it is very difficult to get information about the area and the people who do it. The changes also automatically affect the personality change of the police individually, so obviously it directly reflects their family members and brings many problems to family relationships.

We examined the reasons for work and family difficulties in the categories mentioned above. As responses to their conflicts between family and work, we assess the situation and propose could reduce the WFC's conflict.

- Family wellness (A1)
- Regular health check-ups and physical fitness (A2)
- Special permissions / leave granted as per the requirement (A3)'

Family wellness (A1)

Family wellness entails all members of the family having good mental functioning, useful activities, and meaningful relationships with one another and with persons outside the family. It's no secret that police employment lays tremendous demands on officers - stress may be caused by on-going exposure to trauma and critical occurrences, disturbed sleep, the physical and time demands of the job, and other factors. All of this pressure affects work efficiency: person who is under stress may have a loss of attention, lower productivity, and low morale. However, there are significant implications outside the workplace as well. Because family members are not always aware of the stresses of the job and their potential effects on the officer, this increases the officer's depression and stress. That family tension is pass on to the officer, often in the form of a spouse or partner, who requires the officer to choose between them and the job. The family, being an important aspect of police officers' lives, plays an important role in their welfare. In addition, Officers wives play an important role in creating and maintaining healthy lifestyles. They have an impact on scheduling - making time for workouts, doctor's appointments, or treatment - as well as diet and daily decisions. Again, organisations must take the time to educate wives with information and tools to prepare them for the unique first responder lifestyle as they assist their officers in daily hardships and once-in-a-lifetime disasters.

Finally, emphasizing holistic wellness that connects and nurtures officer families will positively influence retention efforts.

Regular health check-ups for physical fitness/Counselling for mental fitness (A2)

The police personnel's requires a psychological assistance for welfare and counselling services to assess their stress level. Before consulting, each & every police personnel are subject to undertake physical examination to establish their overall health. However, there are less regular fitness check-ups in the department after commencing the police services which is because of their rigorous duty schedules and this reduce the health consciousness. In addition to   Police hospital, department conducting a health camp at several locations but fortunately few personnel's are only able to attend which is appreciable. In order to avoid severe health problem and losing the person, every person to undergo regular health check-ups, physical and both mental fitness as per their age standard and this to be noted in the service records. At this stage, I would like to remind a proverb, ***"Precaution is better than cure"***. Due to various kind of work environment and harder situations, the

pressure and stress created reflects on the family members. These services include assessments and referrals to mental health or other professionals, interventions for a variety of problems, short-term treatment for both individuals and families, and long-term counselling and other services, including substance abuse treatment. Whenever possible, most mental health professionals emphasize the need to involve family members in all of these treatments.

Special permissions / leave granted as per the requirement (A3)
Police department is not like other employment, which is a public service mainly to maintain the Law & Order it has to function 24x7, due to this availing leave is quite impossible. Police personnel's also requires a regular week-off which can be provided on routine basis as per their nature of duty. Recently, the government has initiated this week-off facility and currently it is in progress but not implemented everywhere due to regular challenges faced because of the police strength is less comparing to the actual requirement. Shift based duty also unjustified to personnel's under different divisions like Law & Order, Crime, Traffic, etc. For instance, a police constable in L&O station undergo night duty shift from 9.00 pm to next day 8.am and they have to resume his/her shift again at 1pm to 9pm. Only 5 hours interval they can avail between the shifts, in this they have to complete physical refreshment etc. that too if the residence is within the stipulated distance. As per human anatomy cycle, a human being requires Eight hours resting period that in this case it is quite not applicable which leads to problems viz., insomnia & loss of appetite, cardiovascular disease, obesity and depression. The department has to sanction the Earned Leave as and when required for regenerating the physical and mental health duly spending time with family, which brings work life balance. In similar way, also sanction Medical Leave, if the individual or family members affected medically that too without any demand.

Methodology:
Fuzzy TOPSIS proposed by Hwang and Yoon in 1981 is a popular and widely used method for multi-criteria decision making (MCDM) used to rank the alternative in a fuzzy environment. Fuzzy TOPSIS is a technique that uses data in any form, including numerical and linguistic data. After collecting data from experts and transforming it into fuzzy system mode, it decreases the risks of errors caused by units of parameters. This also causes problems for mathematical computations. To tackle these issues, Fuzzy TOPSIS is an excellent solution. The definitions of fuzzy TOPSIS have been adapted from sources. These definitions are presented as follows.

Definition 1:
A fuzzy set $\bar{a}$ in a universe of discourse X is characterized by a membership function $\mu_A(x)$ that maps each element x in X to a real number in the interval [0, 1]. The function value $\mu_A(x)$ is termed the grade of membership of x in A. The nearer the value of $\mu_A(x)$ to unity, the higher the grade of membership of x in A.

Definition 2:
A triangular fuzzy number is represented as a triplet A = (a_1, a_2, a_3). The membership function $\mu_A(x)$ of triangular fuzzy number A.
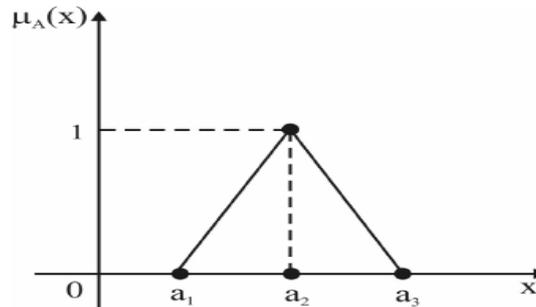

Figure 1:

Triangular Fuzzy number system
a_2 gives the maximal grade of μ_A that $\mu_A = 1$
a_1 gives the minimal grade of μ_A that $\mu_A = 0$
a_1 and a_3 are the lower and upper bounds of the available area for the evaluation data.

$$\mu_A(x) = \begin{cases} x - a_1/a_2 - a_1 & if\, a_1 \le x \le a_2 \\ a_3 - x/a_3 - a_2 & if\, a_2 \le x \le a_3 \\ 0 & otherwise \end{cases} \qquad ....(1)$$

The distance between fuzzy triangular numbers
Let $A = (a_1, a_2, a_3)$ and $B = (b_1, b_2, b_3)$ be two triangular Fuzzy numbers. The distance between them is given using the vertex method by

$$d(A,B) = \sqrt{\frac{1}{3}[(a_1 - b_1)^2 + (a_2 - b_2)^2 + (a_3 - b_3)^2]} \qquad ....(2)$$

Steps involved in Fuzzy TOPSIS Method
Step 1:
Create a decision matrix

In this study there are 5 criteria and 3 alternatives that are ranked based on FUZZY TOPSIS method. The table below shows the type of criterion and weight assigned to each criterion.

Table 1 Characteristics of Criteria

	name	type	weight
1	C1	+	(5.000,7.000,9.000)
2	C2	+	(5.000,7.000,9.000)
3	C3	+	(5.000,7.000,9.000)
4	C4	+	(3.000,5.000,7.000)
5	C5	+	(3.000,5.000,7.000)

The following table shows the fuzzy scale used in the model.\

Table 2 Fuzzy Scale

Code	Linguistic terms	L	M	U
1	Very low	1	1	3
2	Low	1	3	5
3	Medium	3	5	7
4	High	5	7	9
5	Very high	7	9	9

The alternatives in terms of various criteria are evaluated and the results of the decision matrix are shown as follows. Note that if multiple experts participate in the evaluation, then the matrix below represents the arithmetic mean of all experts.

Figure 2 Representation of Criteria in Fuzzy Topsis software.
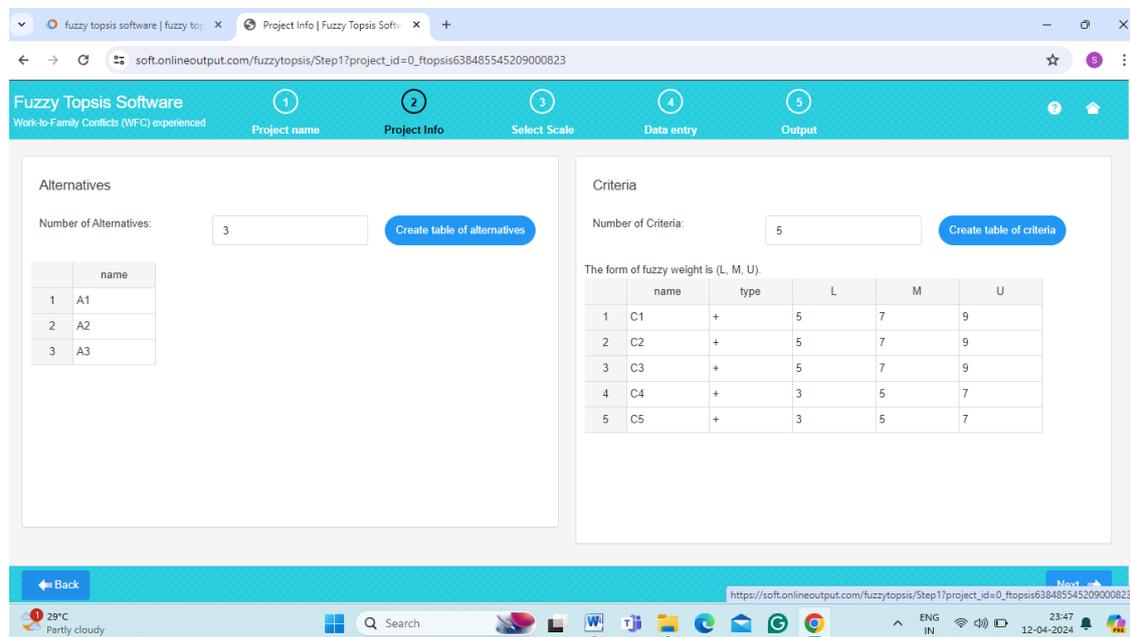
Figure 3 Representation of alternatives in Fuzzy Topsis software.
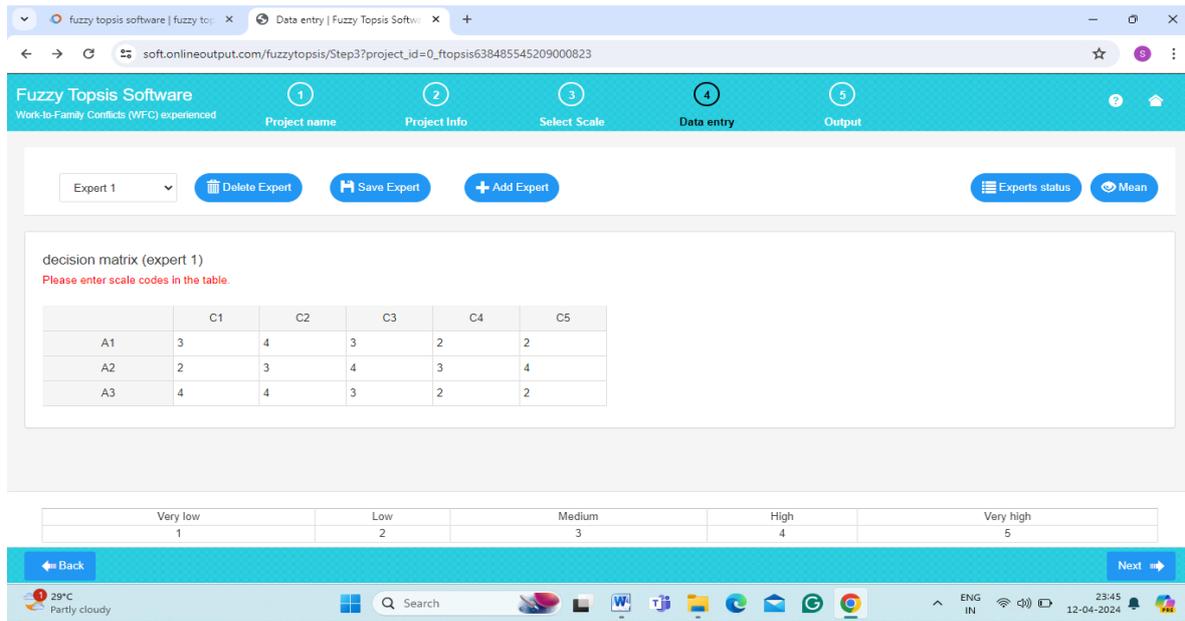
Table 3 Decision Matrix

	C1	C2	C3	C4	C5
A1	(3.000,5.000,7.000)	(5.000,7.000,9.000)	(3.000,5.000,7.000)	(1.000,3.000,5.000)	(1.000,3.000,5.000)
A2	(1.000,3.000,5.000)	(3.000,5.000,7.000)	(5.000,7.000,9.000)	(3.000,5.000,7.000)	(5.000,7.000,9.000)
A3	(5.000,7.000,9.000)	(5.000,7.000,9.000)	(3.000,5.000,7.000)	(1.000,3.000,5.000)	(1.000,3.000,5.000)

Step 2:
Create the normalized decision matrix
Based on the positive and negative ideal solutions, a normalized decision matrix can be calculated by the following relation:

$$\tilde{r}_{ij} = \left(\frac{a_{ij}}{c_j^*}, \frac{b_{ij}}{c_j^*}, \frac{c_{ij}}{c_j^*}\right); c_j^* = max_i \, c_{ij} \; ; Positive \; ideal \; solution$$

$$\tilde{r}_{ij} = \left(\frac{a_j^-}{c_{ij}}, \frac{a_j^-}{b_{ij}}, \frac{a_j^-}{a_{ij}}\right); a_j^- = min_i \, a_{ij} \; ; Negative \; ideal \; solution$$

The normalized decision matrix is shown in the table below.

Table 4 A normalized decision matrix

	C1	C2	C3	C4	C5
A1	(0.333,0.556,0.778)	(0.556,0.778,1.000)	(0.333,0.556,0.778)	(0.143,0.429,0.714)	(0.111,0.333,0.556)
A2	(0.111,0.333,0.556)	(0.333,0.556,0.778)	(0.556,0.778,1.000)	(0.429,0.714,1.000)	(0.556,0.778,1.000)
A3	(0.556,0.778,1.000)	(0.556,0.778,1.000)	(0.333,0.556,0.778)	(0.143,0.429,0.714)	(0.111,0.333,0.556)

Step 3:
Create the weighted normalized decision matrix
Considering the different weights of each criterion, the weighted normalized decision matrix can be calculated by multiplying the weight of each criterion in the normalized fuzzy decision matrix, according to the following formula.

$$\tilde{v}_{ij} = \tilde{r}_{ij} . \tilde{w}_{ij}$$

Where $\tilde{w}_{ij}$ represents weight of criterion c_j
The following table shows the weighted normalized decision matrix.

Table 5 The weighted normalized decision matrix

	C1	C2	C3	C4	C5
A1	(1.667,3.889,7.000)	(2.778,5.444,9.000)	(1.667,3.889,7.000)	(0.429,2.143,5.000)	(0.333,1.667,3.889)
A2	(0.556,2.333,5.000)	(1.667,3.889,7.000)	(2.778,5.444,9.000)	(1.286,3.571,7.000)	(1.667,3.889,7.000)
A3	(2.778,5.444,9.000)	(2.778,5.444,9.000)	(1.667,3.889,7.000)	(0.429,2.143,5.000)	(0.333,1.667,3.889)

Step 4:
Determine the fuzzy positive ideal solution (FPIS, A*) and the fuzzy negative ideal solution ($FNIS, A^-$)
The FPIS and FNIS of the alternatives can be defined as follows:

$$A^* = \{\tilde{v}_1^*, \tilde{v}_2^*, \dots, \tilde{v}_n^*\} = \left\{ \left(\max_j v_{ij} \mid i \in B \right), \left(\min_j v_{ij} \mid i \in C \right) \right\}$$

$$A^- = \{\tilde{v}_1^-, \tilde{v}_2^-, \dots, \tilde{v}_n^-\} = \left\{ \left(\min_j v_{ij} \mid i \in B \right), \left(\max_j v_{ij} \mid i \in C \right) \right\}$$

Where $\tilde{v}_i^*$ is the max value of i for all the alternatives and $\tilde{v}_1^-$ is the min value of i for all the alternatives. B and C represent the positive and negative ideal solutions, respectively.
The positive and negative ideal solutions are shown in the table below.

Table 6 The positive and negative ideal solutions

	Positive ideal	Negative ideal
C1	(2.778,5.444,9.000)	(0.556,2.333,5.000)
C2	(2.778,5.444,9.000)	(1.667,3.889,7.000)
C3	(2.778,5.444,9.000)	(1.667,3.889,7.000)
C4	(1.286,3.571,7.000)	(0.429,2.143,5.000)
C5	(1.667,3.889,7.000)	(0.333,1.667,3.889)

Step 5:
Calculate the distance between each alternative and the fuzzy positive ideal solution A^* and the distance between each alternative and the fuzzy negative ideal solution A^-
The distance between each alternative and FPIS and the distance between each alternative and FNIS are respectively calculated as follows:
$$S_i^* = \sum_{j=1}^n d(\tilde{v}_{ij}, \tilde{v}_j^*) \quad i=1,2,\dots,m$$
$$S_i^- = \sum_{j=1}^n d(\tilde{v}_{ij}, \tilde{v}_j^-) \quad i=1,2,\dots,m$$
d is the distance between two fuzzy numbers , when given two triangular fuzzy numbers (a_1, b_1, c_1) and (a_2, b_2, c_2), e distance between the two can be calculated as follows:

$$d_v(\widetilde{M}_1, \widetilde{M}_2) = \sqrt{\frac{1}{3}[(a_1 - a_2)^2 + (b_1 - b_2)^2 + (c_1 - c_2)^2]}$$

Note that $d(\tilde{v}_{ij}, \tilde{v}_j^*)$ and $d(\tilde{v}_{ij}, \tilde{v}_j^-)$ are crisp numbers.
The table below shows distance from positive and negative ideal solutions.

Table 7 Distance from positive and negative ideal solutions

	Distance from positive ideal	Distance from negative ideal
A1	7.035	3.195
A2	4.792	5.438
A3	5.438	4.792

Step 6:
Calculate the closeness coefficient and rank the alternatives
The closeness coefficient of each alternative can be calculated as follows:

$$CC_i = \frac{S_i^-}{S_i^+ + S_i^-}$$

The best alternative is closest to the FPIS and farthest to the FNIS. The closeness coefficient of each alternative and the ranking order of it are shown in the table below.

Table 8 Closeness coefficient

	Ci	rank
A1	0.312	3
A2	0.532	1
A3	0.468	2

The following graph shows the closeness coefficient of each alternative.
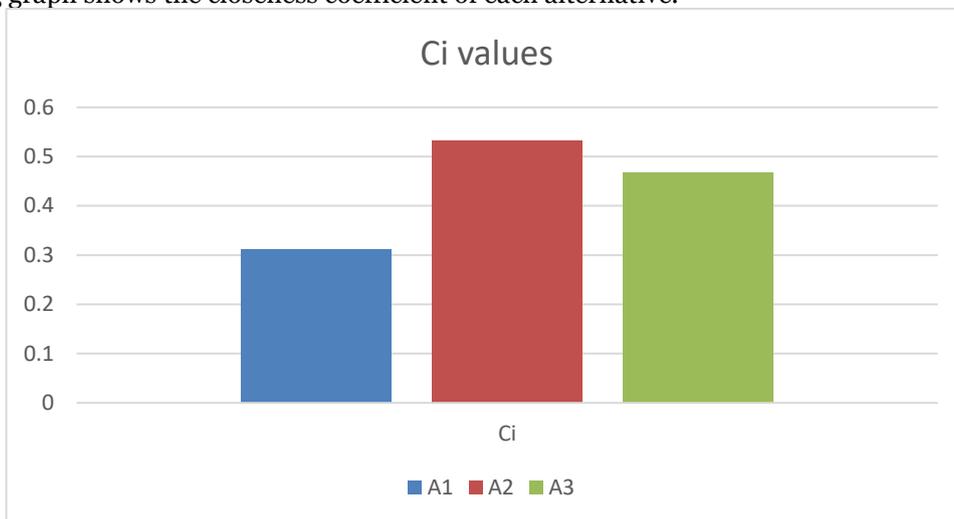
Figure 4 Closeness coefficient of each alternative

Step 7:Ranking of each Alternative
As a consequence of the preceding Fuzzy TOPSIS procedures, the Closeness coefficients CCi for the three alternatives A1, A2, and A3 are 0.312, 0.532, and 0.468 respectively. As a result, the options are ranked in this order: A2>A3>A1, indicating that A2 is the best choice based on the criteria provided.

Results and Conclusion:

As a result, the second Remedial Measure that is, Frequent health check-ups and physical fitness (A2), which can help Tamil Nadu police personnel to manage their work-family conflict (WFC) throughout the working day. Maintaining good health and fitness via exercise and exercises can assist in reducing tension between work and family. The most effective approaches to minimise WFC are to have regular health check-ups and physical fitness, in similarly the other two remedial measures also helps to reduce the WFC conflicts In such manner the third alternative (A3) as well as to provide specific permits or leave when necessary. Individuals and families can also benefit from granting various sorts of leave as needed. Furthermore, the first alternative (A1) Family Wellness, seeks to mitigate work-family conflict. However, the most preferable remedial measures for this problem is Health check-ups and physical fitness (A2) play a major role next to that Family wellness (A1) and Special leave and permission (A3).

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