An Investigation of Personality Types in Male and Female Cancer Patients

(A Case Study in Isfahan, Iran)

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Abstract: Present study is an investigation of different personality traits in cancer patients who came to Saba Clinic in Esfahan, Iran during 2013-2014. It is an applied descriptive survey research. Participants were 60 cancer patients of Saba clinic in Esfahan, Iran, 30 male and 30 female. Sampling was done using stratified method. Using Strong Vocational Interest Blank, one can measure the extent of six personality traits (i.e. conventional, investigative, enterprising, social, artistic and realistic). Independent t-test and descriptive indexes were using for analyzing data and for decoding the most prevalent personality trait in cancer patients, Friedman Test was used. Results showed that average age for cancer male patients was 49.1 (mean: 52) and for females was 42.4 (mean: 39). Most of patients had associate degree or less. A significant difference was observed between artistic, enterprising, social and investigative male patients and the same ones in female group. No meaningful difference was detected between conventional-investigative personality traits in cancer male and female patients. It was observed that the number of artistic, social and investigative personality traits was more among female cancer patients and number of social, realistic and enterprising personality traits was more among male patients. Data, also, showed that social personality, comparing other personality traits, was more prevalent in male cancer patients and social and artistic personality traits, comparing other personality traits, were similarly more prevalent in female cancer patients.

Keywords: personality traits, cancer, male and female patience

1. Introduction

For years, the fact that psychological states of human can affect his body actions and reactions has been considered by scholars and psychologists. Attempts for determining personality traits go back to Hippocrates time and for humors introduced by him. He has corresponded four temperaments with four humors as follow: blood humor with sanguine type, yellow bile with choleric type, phlegmatic with peaceful type and black bile with despondent type.

These attempts, later, expanded into body diseases and personality type was diagnosed as the unique reason of some diseases. Passing time and developing interdisciplinary fields and bio-psycho-social model, this approach was modified. The modified approach states that there is a linear relationship between personality type and other psychological variables from one hand and physical diseases from the other. From this view point it can be said that personality types can pave the way for physical diseases and are not the direct cause of diseases. Following the attempts, scholars could find some evidence saying there is relationship between health and personality.

They discovered every individual, depending on his/her characteristics and personality, has specific emotional reaction and behavior when facing stressful events. The quality of these emotions when facing stressful events paves the way not only for psychological disorders, but

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also for physical diseases (Denollet & Pedersen, 2003).

Cancer is a term used for diseases in which abnormal cells divide without control and are able to invade other tissues and leads to systematic metastasis. Considering the contagion of cancer in different societies around the world, it seems apart from physiological, genetic factor and physical and chemical stimuli, there are some other factors which are not ineffective on an individual to be affected by cancer.

Eysenck (1991) highlights the effect of personality on adjusting some stressful external events with immune system of body and controlling development of some disease like cancer.

There are various viewpoints regarding the causes of cancer. Some scholars have shown the relationship of cancer with some personality characteristics of individuals (Demateo, 2008, Zinalli, et. al. 2012).

Holland[1] six personality types are a very famous group of classifications used by psychologists and scholars. He suggested all people can be categorized based on 6 personality types of realistic, investigative, artistic, social, enterprising and conventional (RIASEC).

The utmost and undeniable prominence of psychological disorders and also unstable results in the area of the relationship between psychological factors, such as personality, and cancer as well as lack of enough number of studies related to personality types.

Holland personality types, in cancer patients, made the author to start to investigate about relationship between cancer and different personality types taking patients' emotional problems or disorders into consideration.

The other question tried in this study to be answered was whether the personality type (based on Holland personality types) has any relationship with cancer in men and women.

In fact, regarding the importance of cancer as one of main reasons of death around the world and the effect of psychological factors on its appearance, the present study aims to investigate the frequency of Holland personality types in cancer male and female patients in Esfahan city, Iran.

The main question in present study is which personality type has the highest frequency in male and female cancer patients in Esfahan city, Iran. Due to lack of enough population we had to choose our samples from 60 hospitalized or under treatment cancer patients in Saba clinic in Esfahan, Iran.

2. Materials

In order to find the answer of this research question we chose applied descriptive survey research method and Sampling was done using stratified method. Field searching is a prevalent research method in social science and is used to investigate the distribution and characteristics of a population. In this method, which is usually used in large populations, questionnaires are used for data collection and the researcher renews the population through sampling and finally generalizes the results from sample population to the whole one.

It is worth noting that the whole population of the present study is the whole number of cancer patients who referred to Saba Clinic for treatment from May 2013 to march 2014 (this time period was selected randomly).

[1] John Holland is well known in occupational psychology and his theory has been used in many researches. Holland based his theory upon 2 principles:

1- Choosing a career is dependent on individual's personality type.
2- Individual's choice is directly related to his/her approach toward work environment.

The choice and change theory is based on 7 hypotheses:

1. Most of the people are included in, at least, one of 6 personality types: realistic, investigative, artistic, social, enterprising and conventional.
2. Holland believes there are 6 personality types corresponded with 6 working environments. If every individual with specific personality type works in its corresponded working environment, he/she will have the highest level of productivity.
3. All individuals are seeking working environments in which they can foster their talents, abilities, roles and approaches.
4. Individual's behavior is formed by his/her personality and the environment. Occupational factors like occupational satisfaction, choosing and success in the occupation can be predicted through detecting the compatibility between personality and environmental patterns.
5. A hexagonal model can be illustrated for depicting the relationship between individual and occupation. For instance, a realistic person is most likely successful in occupation corresponded with realistic type not with social type.
6. Also, a hexagonal model can be illustrated for depicting the relationship between individual and working environment.
7. The amount of difference between the individual's personality and his/her working environment can affect his performance. The more the individual is like the environment, the higher his/her job satisfaction.

Hollands 6 personality type introduced by him in 1970 are as follow:

A) Realistic type: Realistic people avoid social activities and are autonomous, mechanical, frank, economic, practical and direct.
B) Investigative type: these people are analytical, independent, logical, intellectual, critical, introspective, isolated, complex, pessimistic, humble, curious and strict.
C) Artistic type: these people are ambiguous, daydreamer, intuitive, disorganized, impractical, incompatible, emotional, self-stimulated, innovative, expressive, independent, sensitive, idealistic, introvert and freehearted.
D) Social type: social people are regnant, helpful, responsible, coordinative, idealistic, patient, social, pilot, good friends, kind, understanding, generous and social.
E) Enterprising type: enterprising individuals are avaricious, energetic, coquettish, adventurous, flaunty optimistic, good temper, self-confident, ambitious, social and talkative.
F) Conventional type people are cautious, inflexible, pursuant, self-controlled, practical, dutiful, forethoughtful, defensive, submissive, economic, organized and are of no fantasy.

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Sample group was composed of 60 cancer patients. Sampling was done using stratified method using available population.

This population was heterogeneous – 50% male and 50% female. [2]Due to lack of enough samples this number of samples who were available for the study.

Most of the patients refused to take part in the study. Therefore we had a small number of samples. Strong Vocational Interest Blank was used for investigating personality types.

The study is an applied descriptive survey and SPSS software was used for statistical calculations. In descriptive level some indexes like average (of questionnaires scores), standard deviation, mean, min and maximum of scores were calculated and in deductive level, t-test was used for determining different personality types in male and female cancer patients and Freidman test was applied to distinguish to which personality type the most number of cancer patients belong.

scores	Sex	Average	Max	Min	Mean	SD
Artistic Type	Male	31/99	59	17	27	12/75
	Female	41/45	59	12	44	11/88
ocial TypeS	Male	57/84	72	41	59	9/19
	Female	40/66	72	6	42	15/50
Investigative Type	Male	34/46	44	23	35	6/61
	Female	38/65	57	3	4	16/52
Enterprising Type	Male	40/20	56	26	40	8/95
	Female	31/92	52	17	27	11/01
Conventional Type	aleM	31/99	49	16	35	9/38
	Female	31/95	48	18	33	7/99
Realistic Type	Male	45/63	59	7	50	12/01
	Female	27/92	55	8	26	11/92

3. Descriptive Statistics

The average, SD, mean, min and maximum of scores in Strong Questionnaire of samples are presented in the following table

[2] Cancer patients were identified after getting necessary allowances from the Saba Clinic. All patients were all willing and sure to cooperate in the study and fill the questionnaire. All patients were informed about the aims and method of filling the questionnaire and then filled it. The questionnaire included 290 questions and the time for filling it was 35 to 40 minutes.

Table1: Strong personality types scores based on sex of patients

Table2: Relative frequency of population based on education and sex.

Education	Sum		Female		Male	
	p	f	p	f	p	f
Under Diploma	20	12	20	6	20	6
Diploma	41/7	25	46/7	14	36/7	11
Associate	10	6	10	3	10	3
Bachelore	20	12	16/7	5	23/3	7
Master	6/7	4	6/7	2	6/7	2
PHD	1/7	1	0	0	3/3	1
Sum	100	60	100	30	100	30

Table3. Relative frequency of population based on age and sex

Age	Sum		Female		Male	
	p	f	p	f	p	f
18 - 27	15	9	13/3	4	16/7	5
28 - 37	18/3	11	26/7	8	10	3
38 - 47	20	12	20	6	20	6
48 - 57	18/3	11	20	6	16/7	5

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58 - 67	23/3	14	16/7	5	30	9
68 - 77	5	3	3/3	1	6/7	2
Sum	100	60	100	30	100	30

Table4. Relative frequency of population based on sex and the time period affected by cancer

Number of months the patient was affected	**Sum**		**Female**		**Male**	
	p	f	p	f	p	f
1 - 24	78/3	47	90	27	66/7	20
25 - 48	13/3	8	6/7	2	20	6
49 - 72	3/3	2	3/3	1	3/3	1
73 - 96	3/3	2	0	0	6/7	2
97 - 120	1/7	1	0	0	3/3	1
Sum	100	60	100	30	100	30

Table5: Relative frequency of population based on sex and the cancer type

Male	Sum		Female		Male	
	f	p	f	f	p	f
Lymphatic glands	11/7	7	13/3	4	10	3
Lever	5	3	0	0	10	3
Colon	6/7	4	6/7	2	6/7	2
Pancreas	3/3	2	3/3	1	3/3	1
Mastectomy	3/3	2	3/3	1	3/3	1
Breast	1/7	10	33/3	10	0	0
Hodgkin	5	3	3/3	1	6/7	2
rary and bladdevO	1/7	1	3/3	1	0	0
Lung	5	3	3/3	1	6/7	2
Blood	5	3	3/3	1	6/7	2
Rectum	1/7	1	3/3	1	0	0
Pelvis and bone	6/7	4	13/3	3	3/3	1
Palate	1/7	1	3/3	1	0	0
intestine and gastric cancer	1/9	11	13/3	3	26/7	8
Head	1/7	1	3/3	0	3/3	1
Prostate	6/7	4	0	0	13/3	4
Sum	100	60	100	30	100	30

As it can be seen from tables2, 25 patients (41.7%) had diploma, 12 patients (20%) had bachelor degree, 12 patients (20%) were under diploma, 4 patients (6.7%) had master degree and 1 patient (1.7%) had PHD. The highest frequency of patients had diploma

Average age of the population was 45.7 and the mean was 45 and SD was 15.2. The youngest patient was 18 and the oldest one was 77. Average age of the male population was 49.1 and the mean was 52 and average age of the female population was 42.4 and the mean was 39.

The average time period the patients were affected by cancer was 16.8 months, SD 22.9. The min time period was 1 month and the longest time period was 120 months. The average for men was24.3 months, mean 12, and for women was 9.6 months, mean 5 months

4. Deductive Statistics

In this section we shoe different personality types in cancer male and female patients. To reach this information t-test was applied and Freidman test was used for determining the most common personality type among cancer patients.

1. A meaningful difference was observed between male and female patients with artistic personality type.

Table6. Mean and SD of cancer patients with artistic personality type

Artistic type	**Sex**	**Mean**	**SD**	t-test	P - value
	male	31/99	12/75	- 2/975	0/004
	female	41/45	11/88		

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As is clear in above table the average score for male patients with artistic personality is 31.99, while this score for females is 41.45. Applying t-test, noting $p < 0.05$, it can be concluded the difference between these two groups is meaningfully significant and artistic women are more likely to be affected by cancer compared with artistic men.

2. No significant difference was observed between male and female patients with conventional personality type.

Table7. Mean and SD of cancer patients with conventional personality type

	Sex	Mean	SD	t-test	P - value
Conventional type	male	31/99	9/38	0/017	0/986
	female	31/95	7/99		

It can be seen in table No 7. That the average score for male patients with conventional personality is 31.99, and this score for females is 31.95. Applying t-test, noting $p < 0.05$, it can be concluded the difference between these two male and female groups with conventional personality type is not significant.

3. A meaningful difference was observed between male and female patients with enterprising personality type.

Table8. Mean and SD of cancer patients with enterprising personality type

	Sex	Mean	SD	t-test	P - value
Enterprising type	male	40/20	8/95	3/197	0/002
	female	31/92	11/01		

Table No 8 shows that the average score for male patients with enterprising personality is 40.20. This score for females is 31.92. Applying t-test, noting $p < 0.05$, it can be concluded the difference between these two groups is meaningfully significant and enterprising men are more likely to be affected by cancer compared with enterprising women.

4. No significant difference was observed between male and female patients with investigative personality type.

Table9. Mean and SD of cancer patients with investigative personality type

	Sex	Mean	SD	t-test	P - value
Investigative type	male	34/46	6/61	- 1/291	0/205
	female	38/65	16/52		

It can be seen in table No 9 that the average score for male patients with investigative personality is 34.46, and this score for females is 38.65. Applying t-test, noting $p < 0.05$, it can be concluded the difference between these two male and female groups with investigative personality type is not significant.

5. A meaningful difference was observed between male and female patients with social personality type.

Table10. Mean and SD of cancer patients with social personality type

	Sex	Mean	SD	t-test	P - value
Social type	male	57/84	9/19	5/22	<0/0001
	female	40/66	15/50		

It is clear from table No 10 that the average score for male patients with social personality is 57.84 compared with 40.66 in females. Applying t-test, noting $p < 0.05$, it can be concluded the difference between these two groups is meaningfully significant and social men are more likely to be affected by cancer compared with social women.

6. A meaningful difference was observed between male and female patients with realistic personality type.

Table11. Mean and SD of cancer patients with realistic personality type

	Sex	Mean	SD	t-test	P - value
Realistic type	male	45/63	12/01	5/732	<0/0001
	female	27/92	11/92		

Regarding mean:45.63 in male patients compared with mean:27.92 in female cancer patients shown in table 11 and applying t-test, noting $p < 0.05$, the difference between these male and female realistic patients is meaningfully significant and realistic men are

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more likely to be affected by cancer compared with realistic women.

7. There is difference between different personality types in male and female patients.

Table No 13. Mean and SD of female cancer patients with different personality types

Personality type scores in male patients	SD	Mean
Social type	9/19	57/84
Realistic type	12/01	45/63
Enterprising type	8/95	40/20
Investigative type	6/61	34/46
Artistic type	12/75	31/99
Conventional type	9/38	31/99

Chi-Square=57.536, P-value <0.0001

Applying Freidman test, different personality traits in male and female patients were compared. Table 12 shows the most common personality trait among male cancer patients is social type. Social personality type, as well as artistic type, is common in female cancer patients, noting table No 13.

Table13. Mean and SD of female cancer patients with different personality types

Personality type scores in female patients	SD	Mean
Artistic type	11/88	41/45
Social type	15/50	40/66
Investigative type	16/52	38/65
Conventional type	7/99	31/95
Enterprising type	11/01	31/92
Realistic type	11/92	27/92

Chi-Square=16.668, P-value <0.005

Figure1 shows the corresponsive depiction of male and female cancer patients, taking their personality type score means into consideration.

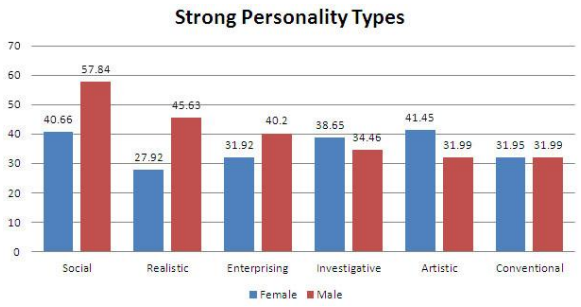

Figure1. Comparative depiction of personality type scores in male and female cancer patients

5. Result and Conclusion

Present study was manipulated to determine the relative frequency of different personality types in cancer patients in Esfahan city, Iran, from 2013 to 2014. The data collected showed:

1. The largest group of cancer patients' education was diploma. Hajian et.al. (2001) showed in their study that growing the age has direct correlation with cancer affection. Data collected in present study shows that more than 50% of cancer patients were more than 60 years old. Therefore, it can be concluded that the present study's results confirm Hajian et.al study results. Our results showed that men are more likely to be affected by cancer than women.

2. From the information taken from tables, it may be inferred that there is a meaningful difference between enterprising, social and artistic personality types in male and female patients. Female patients are more artistic and male patients are more enterprising, social and realistic. Realistic people, based on Holland, are self-controlled, flexible, materialist, obstinate, practical, humble, objective, and conservative and prefer more applied and mechanical activities and like to work with machines, tools, plants and animals in open areas. Enterprising people are adventurous, and seek for power and position and for others support. They like to be leaders and acquire finance and commerce. Our results confirmed study results by Hamidi (1999) and Alhosaini (1996) in that relative frequency of realistic type is higher in males and artistic type is higher in women. Some of the test's items which were mostly about "realistic" tendencies and measured some uncommon virile jobs were less answered by females. Holland (1997-1999) believes in almost all cultures more realistic jobs are naturally taken by men.

3. From the data analysis, it can be deducted that there is no meaningful relationship between conventional and investigative personality types in male and female cancer patients. Experiences and heirship of a conventional person leads him to prefer some activities the outcome of which

would be for him/her to prefer simpler, regular activities, and to prefer to work more with data in order to achieve organizational, economic and less ambiguous, less explorative and less disorganized goals.

These tendencies, in turn, will lead to acquirement of some behaviors which may use conventional qualifications. Hakimara (1995) in his research the most common personality type in boys was investigative. Hamzei (1997) in his study showed that the highest percentage of students were artistic, investigative, social, conventional, enterprising and realistic, respectively. This result does not accord with the present study's results.

4. The most common personality type in male participants was social and the least common types were artistic and conventional.

While the most common personality type in female participants were artistic and social, respectively. Artistic people are far from order and are more disorganized and are sensitive in their relationship with others. They are less self-controlled, and easily talk about their emotions. Given this, it may be inferred that one of reasons which may be related with more commonness of cancer in this group, may be above characteristics. Artistic people tend to show their artistic innovative abilities in less organized situations and to use their creativity and fantasy. Thus, this personality type may be expected to be more common among women who are more responsible for house work and family. From the other hand, some characteristics like being emotional and feeling powerless, while seeking for power, are of causes of appearance of social alienism, which, in turn, lead the women to be less social than men. Social people, when facing a problem, look for emotional-sensitive solutions. Of course choosing this solution for participants of this study may be influenced by their specific situation, i.e. feeling remediless and having no way away from the problem.

These people like to work with people and to be taught and informed what to do and to be treated. The least frequency was about conventional type. Conventional people, when facing a problem, tend to seek for and choose some organized and pre-tested solutions. It may be said that one personality type in every participant individual was more powerful than others.

5. Considering these results, the author may conclude that, comparing other personality types, a higher percentage of men are social and a low percentage of them are artistic and conventional.

On the other hand most of the women are artistic and social. However, these results may not be generalizable to all people due to specific emotional and psychological condition of participants when answering questions, i.e. they are cancer patients. Kretschmer (1888-1964) believes that personality is the emotional and volitional aspect of behavior, while Allport (1898-1967)poses that personality is the dynamic psychological systems of an individual which determine his/her adaptability with environment; On the other hand, Holland says that, accurate observing of human behavior, it can be taken one of six personality types is more highlighted in every individual. It may be said that, generally speaking, personality types affect individual's life style.

Individuals who get higher scores in special personality types usually experience more negative and positive emotional tensions based on their highlighted personality type and this, in turn, influences their life quality and behavior. Investigative individuals, as a good example, are analytic, cautious, critical, curious, independent, light-minded, introvert, pessimist, complicated and accurate.

Amirinia (1996) showed in his study, some personality characteristics such as need for courage, submissiveness, condescension, despicability, and low self-esteem are good

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predictors for high stressful experiences. Jafari et.al. (2009) posited that cancer individuals, comparing C personality type individuals, are of higher external control source and lower psychological hardiness. Bakhshayesh (2012) and Eslami (2012) showed there is correlation between personality type and mental health. Their results showed a reverse correlation between public health and neurosis and a direct correlation with being extrovert and loveliness and no correlation with flexibility and responsibility.

They also noted that low public health is directly correlated with neurotic personality and high public health is directly related with extrovert personality and being lovable. Soltani Shal (2011) in his study got perceived stress, interactive guidelines, D personality type and Emotional intelligence can be good predictors of patients' life quality. Davoodi et. al. (2009) expressed not only are behavioral activating and deterring systems of individuals predictable through personality type determining, but also their personality type can be predicted through fight-or-flight and behavioral deterring. Therefore; participants' personality is affected by their illness seriousness and its outcome behaviors. It is also possible to affect personality type and behaviors through managing them. Hajjaran (1993) and Cohen & kuten (2006) in their study got that, group cognitive behavioral intervention is effective in alleviating cancer effects on cancer children and significantly increases adaptability of relatives and cancer patients. S. Behzadipoor et.al. (2013) studied on effectiveness of stress management based on cognitive-behavioral intervention on quality of Life and coping styles for female with breast Cancer.

The experimental group received 10 sessions of cognitive behavior stress management therapy. The control group did not receive any psychological intervention. The results suggested an improvement and a *statistically significant difference* in the quality of life and coping style in *the experimental group* compared with the control group. A two-month follow up study confirmed the results. Cognitive behavior stress management resulted in the improvement of quality of life and coping style. Carver et. al. (1993) showed that optimist women, compared with pessimist ones, accepted cancer diagnosis and its treatment easier. They also reported that cancer patients who experience more positive emotions and have positive evaluations about events are more able to control the illness and are more satisfied in their lives. Mueller et.al. (2001) showed that excluding age, sex and marital state, those cancer patients whose illness was more recently diagnosed experience less stress and were of better mental health. Beery et.al (2002) in her research results explained that those patients with stronger religious beliefs and spirituality were of extremely better spiritual condition. Montazergheyb & Keykhanejad (2012) showed that work exhaustion is lower in social personality type and is higher in realistic, conventional and enterprising. Lachterman et.al (2004) decoded a meaningful direct relationship between the individual's personality type and his/her working environment.

It seems that, considering the relationship between emotions and body immune system, immune system in patients works weakly coping with stress and make them more vulnerable against illness. Research shows that cancer patients experience more negative emotions. In fact, experiencing more negative emotions is caused by utmost stress in their pre-cancer lives. On the other hand, individuals' differences in personality types show that not only are they different in their experiences of life, but also are different in vulnerability against them.

These differences may be due to difference in education, value system and approaches and to their different personalities. Scholars define personality as "dimensions of personal

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differences in their preference in showing stable thought patterns, senses and practice. Personality type has effect on behavior and individual's approaches. This effect sometimes leads to gradual changes and sometimes produces outstanding changes. Also, personality problems aspects can significantly affect the motivations, performance, working spirit and immunity of individuals.

6. The present study results generally show that personality types are different in men and women and are of high importance when coping with cancer. Using results of this study, it can be concluded that decoding cancer patients' personality type can be helpful in choosing their illness management, intervention and treatment method. Artistic characteristics of women and social characteristics of men are better to be taken into consideration when selecting the best method

5. Results and discussion

The lowest V-funnel flow time as 5 s was measured for the SCC-N0, while the SCC-N5 mixture had the highest flow time as 6.2 s. The L-box height ratios were in the range of 0.79–0.87. Incorporating TiO_2 Nano powder generally made the concretes a little more viscous. Some of the rheological properties of the mixtures were less than the lower limits established by EFNARC [23];

however, all concrete mixtures filled the molds by its own weight without the need for vibration. In addition to the above properties, visual inspection of fresh concrete did not indicate any segregation or considerable bleeding in any of the mixtures containing nanopowder during the slump flow and V funnel; however, a little bleeding was observed in the control specimens without any admixture. The effect of including TiO_2 nanopowder with various volume fractions decreased flowability characteristics a little; nevertheless, the nanopowder improved the consistency of concrete mixtures. Less bleeding and segregation were also observed in the mixtures containing TiO_2 nanopowder.

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