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Research Article

Symptomatic Complications and Quality of Life in Pakistani Patients with Iron-Deficiency Anemia

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Abstract: Pakistan is among those countries of South Asia that have concentrated prevalence of Anemia. The outcome complications of Anemia are quite adversative such as maternal and infant mortality, infertility in child bearing age, quality of life as this may impair the daily life functioning of an individual due to limited activity patterns thus affecting the work capacity. Therefore, this study has been designed to juxtapose quality of life and symptomatic complaints' severity in anemic patients across gender. A quantitative comparative analysis through cross sectional research design was used to collect the data. The sample of 300 patients was taken from Hematology Outpatient Clinics of Lahore between June, 2018 and October, 2018. The scales were standardized and carried intact psychometric properties including demographic sheet, Health Survey Form (HSF-36) and Quality of Life, computed by accumulating scores from health domains form. There were marked gender differences in clinical complaints and reported quality of life in patients with anemia. There was Beta anemia-related difficulties, symptoms' severity, pulsating pains, spasmodic exhaustions, and impaired daily life activities or restricted activity patterns that were evident more among females than males. This is pertinent to mention that males had active lifestyles with frequent reports of exercises than females. Pakistani females with anemia recounted poorer social support, tended to evaluate them in miserable states, and went through more transfusions. In short, this study discloses that Pakistani females with iron deficiency anemia report poorer quality of life, tend to maintain more health-related complications and experience greater symptoms severity than their male counterparts. This is implicated that psycho-education of healthful measures and by practitioners giving greater consideration to addressal of symptoms, quality of life of such patients can be improved.

Keywords: Symptoms of Anemia, Occurrence and severity of Anemia, Anemia related complications, Gender differences in Anemia

1. INTRODUCTION

Anemia is a condition marked with genetic and acquired predisposition. This has affected millions of people across the world. This is a specific blood disorder affecting the red blood cells in such a way that capacity of red blood cells to absorb oxygen is insufficient to meet physiological needs. This varies across different stages of life and may stand discrepant with reference to age groups, smoking status, diet patterns, pregnancy, and predominantly the gender [1]. Hemoglobin present in human blood is iron rich protein that supports red blood cells in supplying oxygenated blood from lungs to some specific tissue. This deficiency of iron leads to state of anemia with wide array of symptoms such as fatigue, headaches, and shortness of breath, dizziness and nausea [2]. Anemia is accelerated due to multiple physiological conditions such as Thalassemia, nutrient deficiency, chronic prolonged fevers, and haemoglobinopathy etc. but iron deficiency anemia without any compromised disease is the topic of concern in current investigation [3]. The outcome complications of Anemia are quite adversative such as maternal and infant mortality, infertility in child bearing age, quality of life as this may impair the daily life functioning of an individual due to limited activity patterns thus affecting the work

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capacity. In Pakistan there had been fewer studies on prevalence of anemia in Pakistan; the ones that are conducted reveal that Pakistani women have greater occurrence of this and bear the brunt of complications for long as there are no medical facilities provisions to them [4].

India has shown similar patterns of anemia as that of Pakistan with particular range from 18.1% of the general population [5]. There have been some other epidemic reports by WHO that reveal that anemia is most prevalent in South Asia in comparison to the world. India and Pakistan whereas, have the concentrated prevalence of iron-deficiency anemia among countries of South Asia [6]. In Pakistan, the prevalence is reported to be 17% of the general population and this varies across regional affiliation of residents from plain to hilly regions. In Pakistan, due to limited research opportunities, there are fewer empirical evidences on Anemia dimensions across gender; likewise its relative prevalence is not widely been explored in context of Eastern and Southern regions of Pakistan [7-8]. Hence the main goal here is to fill in the gaps in existing empirical work and investigate the pertinent factors relevant to anemia.

Another aspect in addition to symptoms prevalence, which is scarcely investigated in iron-deficiency Anemia patients, is health related quality of life [9-10]. This is commonly observed that all such physical conditions that hamper daily life activities' patterns or compromise the health status of an individual lead to their poorer quality of life and may interplay with demographic factors and clinical complications to cause psychological distress which is though not addressed here but may be researched further [11-12]. In some previous medical investigations, the results linked to patients' gender differences in QoL have been arguable. For instance, results from some of the past empirical studies establish that women reported lesser QoL compared to males (18-20 years old). Ahmed et al. [13] executed empirical investigations on HR-QoL in adults with anemia. According to their findings, there were no marked gender differences on SF-36 subscales, though there were sub-clinical insignificant differences on physical functioning subscale. Other empirical investigations have divulged marked differences between females and males on such dimensions as psychological well-being, emotive hitches, perceived energy levels to do certain task, active participation in social happenings or while performing duties, pain-management, or in general reported health. There have been some empirical studies that revealed that gender did not affect perceived psychological well-being, general reported health and QoL of patients with anemia [14]. Though this grave phenomenon has been put into inquiry in Asian countries and is vindicated by prevalent anemia in Asian regions, explicitly in Pakistan, Bangladesh, India and China, there are fewer investigations that have specifically highlighted quality of life across gender [15-16]. Moreover very fewer empirical studies have utilized the in-depth digging of the information by means of detailed scales such as Health Survey Form HSF-36 on iron-deficiency Anemia. This scale has established psychometric properties and encompasses health related complications and symptoms of Anemia very comprehensively [17-18].

Thus, this study designates gender differences in anemia and its associated complications and symptoms by means of an exclusive scale HSF-36 [19]. In view of above stated identified gaps in empirical review, current research hypothesizes that there are likely to be significant gender linked anemia-related complications and symptoms across males and females, and there is likely to be poorer quality of life in females suffering from anemia than their male counter parts.

2. MATERIALS AND METHODS

2.1 Sampling Procedure

The current empirical investigation was designed to target Lahore and its suburban regions in order to check the symptoms' severity, prevalence and association with quality of life in males and females with special focus on highlighting the gender differences. The study was mainly based in Lahore and accessed data through multicenter approach by means survey method. The incumbent participants were recruited from Hematology Outpatient Clinics between June, 2018 to October, 2018. The respondents were from age ranges 18 years to 35 years with predetermined screened diagnosis of iron-deficiency anemia. Different hematology centers within hospitals' set ups, or privately

operating in the city and suburb district levels were approached for engaging the sample. As per requisite of ethics fulfillment, all authority letters were formally signed and permissions were sought from concerned institutes. Only those patients who volunteered to spare time for extending data and signed written consent were asked to complete the scales or questionnaires. An indigenous detailed informed consent form was filled by each of the participants, while those who were not able to read and write were excluded. Thus the sample ultimately comprised of 300 respondents (n=300) though (330) surveys were administered with around 91% response rate, 30 forms were rejected as there were 30 incomplete forms with more than 45% unfilled and declined by the respondent. In other words, those having careless omissions in filling the data or those who withdrew in the middle of filling the forms (incomplete form) were excluded from final data analysis.

2.2 Scales

Demographic Sheet was indigenously prepared as per requirement specificities. This was used for gaining thorough information such as the patients' age/year, gender (male/female), and BMI based evaluations of obesity (those having body mass index value greater than 32), prior history medical conditions etc. The patients were investigated about anemia-related marks, symptoms, and complications, experienced in past two months or more. These complications were comprehensivly broad and somehow not just restricted to infections,

Table 1. Anemia patients' characteristics by gender

		Overall n=300		**Male 154(51%)**		**Female 146(49%)**		
Characteristics	**Levels**	**n**	**%**	**n**	**%**	**n**	**%**	**p**
Hospital/clinic visits	<3	88	29.3	46	29.9	42	28.8	0.721
	≥3	21	70.7	108	70.1	104	71.2	
Obesity	Yes	144	48.0	20	13.0	124	85.0	0.64
	No	156	52.0	134	87.0	22	15.0	
Thermic states	Yes	164	54.7	19	12.3	145	99.0	0.003*
	No	136	45.3	135	87.7	1	1.0	
Itching	Yes	193	64.3	121	79.0	72	49.0	0.88
	No	107	35.7	33	21.0	74	51.0	
Swelling/edema	Yes	188	62.7	44	28.6	144	98.7	0.01*
	No	112	37.3	110	71.4	2	1.3	
Blood transfusion	Yes	127	42.3	23	15.0	104	71.23	0.09*
	No	173	57.7	131	85.0	42	28.77	
Family history of anemia	Yes	153	51.0	51	33.1	102	69.9	0.05*
	No	147	49.0	103	66.9	44	30.1	
Family support	Yes	40	13.3	28	18.0	12	8.0	0.02*
	No	260	86.7	126	82.0	134	92.0	
Chronic disease other than Sickle Cell	Yes	203	67.7	62	40.0	141	97.0	0.93
	No	97	32.3	92	60.0	5	3.0	
Regular exercise	Yes	12	4.0	8	5.1	4	2.7	0.001*
	No	288	96.0	146	94.9	142	97.3	
Spleen removal	Yes	112	37.3	74	48.0	38	26.0	0.13
	No	188	62.7	80	52.0	108	74.0	
Age / years	Mean±SD	24.21±2.13		27.12±6.12		23.15±3.11		0.23

*Chi-square test is significant at α=0.05.

temperature irregularities (Yes/No), puffiness or inflammations (Yes/ No), skin-blotches or redness (Yes/No), and evidences of blood transfusions (Yes/ No) etc. Additional information carried information sought for prior hospital visits, admissions for medical complications (Yes/No), hospital visits and stay for more than three times, activity levels and exercise patterns (Yes/No), any comorbid medical conditions, states or presence of other diseases (Yes/No). The scale used in current investigations was derived from Medical Outcomes Study (MOS). This measure contained 36-Item Health Short-Form Survey (HSF-36) [19] and measured health related outcomes specifically in states of Anemia. Its main subscales included domains of physical functioning, psychological well-being, emotional wellbeing, social well-being, somatic pains, activity levels, vitality, and accumulative health patterns. Furthermore its positive domains' scores were accumulated to yield health related quality of life.

2.3 Reliability of Scales

In one of the former studies, the psychometric properties and lingual equivalence in English and Urdu versions of HSF-36 were found to be equivalent [18]. Intact internal consistency and substantial Cronbach's alpha coefficients were reported as 0.60 to 0.86 for all of its domains. Some responses had polychotomous response sets such as rating their health in general (poor, fair, good, very good, or excellent), and response was coded to (poor vs. fair to excellent).

2.4 Statistical Analysis

The data analyses i.e. descriptive were means and standard deviations, counts and percentages, while Chi-Square was used for establishing the associations between anemia-related complications and symptoms as paralleled between males and females (Table 1 & Table 2).

Table 2. Anemia patients' characteristics by gender

		Levels	Overall n=300		Male 154(51%)		Female 146(49%)		
S. No.	**Items**		**n**	**%**	**n**	**%**	**n**	**%**	**p**
1	In general, would you say your health is:	Poor	130	43.3	36	23.3	94	64.3	0.01*
2	Compared to one year ago, how would you rate your health in general now?	Much worse	167	55.6	49	31.8	118	80.8	0.66
3	Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	Limited	182	60.6	52	33.7	130	89.0	0.23
4	Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	Limited	147	49.0	68	44.1	79	54.1	0.07
5	Lifting or carrying groceries	Limited	218	72.6	114	74.0	104	71.2	0.02*
6	Climbing several flights of stairs	Limited	185	61.6	90	58.4	95	65.0	0.05
7	Climbing one flight of stairs	Limited	209	69.6	105	68.1	104	71.2	0.06*
8	Bending, kneeling, or stooping	Limited	207	69.0	87	56.4	120	82.1	0.14
9	Walking more than a mile	Limited	164	54.6	73	47.4	91	62.3	0.11
10	Walking several blocks	Limited	230	76.6	122	79.2	108	73.9	0.19
11	Walking one block	Limited	159	53.0	56	36.3	103	70.5	0.00*
12	Bathing or dressing yourself	Limited	206	68.6	82	53.2	124	84.9	0.21
13	Cut down the amount of time you spent on work or other activities	Yes	207	69.0	71	46.1	136	93.1	0.85
14	Accomplished less than you would like	Yes	214	71.3	81	52.5	133	91.0	0.55

15	Were limited in the kind of work or other activities	Yes	214	71.3	93	60.3	121	88.9	0.64
16	Had difficulty performing the work or other activities	Yes	221	73.6	78	50.6	143	97.9	0.06
17	Cut down the amount of time you spent on work or other activities	Yes	197	65.6	93	60.3	104	71.2	0.53
18	Accomplished less than you would like	Yes	192	64.0	96	62.3	96	65.7	0.34
19	Didn't do work or other activities as carefully as usual	Yes	153	51.0	92	59.7	61	41.7	0.68
20	During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?	Extremely	237	79.0	108	70.1	129	88.3	0.39
21	How much bodily pain have you had during the past 4 weeks?	Very severe	188	62.6	58	37.6	130	89.0	0.00*
22	During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?	Extremely	210	70.0	97	62.9	113	77.3	0.24
23	Did you ever feel full of perspiration?	All of the time	142	47.3	38	24.6	104	71.2	0.02*
24	Have you been a very nervous person?	All of the time	170	56.6	36	23.3	134	91.7	0.06
25	Have you felt so down in the dumps that nothing could cheer you up?	All of the time	151	50.3	22	14.2	129	88.3	0.21
26	Have you felt calm and peaceful?	All of the time	225	75.0	106	68.8	119	81.5	0.68
27	Did you have a lot of energy?	All of the time	181	60.3	52	33.7	129	88.3	0.31
28	Have you felt downhearted and blue?	All of the time	125	41.6	15	9.7	110	75.3	0.99
29	Did you feel worn out?	All of the time	147	49.0	32	20.7	115	78.7	0.25
30	Have you been a happy person?	All of the time	127	42.3	21	13.6	106	72.6	0.05
31	Did you feel tired?	All of the time	176	58.6	44	28.5	132	90.1	0.83
32	During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?	All of the time	172	57.3	75	48.7	97	66.4	0.15
33	I seem to get sick a little easier than other people	Definitely	208	69.3	83	53.8	125	85.6	0.16
34	I am as healthy as anybody I know	Definitely	216	72.0	134	87.0	82	56.1	0.44
35	I expect my health to get worse	Definitely	173	57.6	73	47.4	100	68.4	0.70
36	My health is excellent	Definitely	144	48.0	121	78.5	23	15.7	0.81

3. RESULTS

Total 300 iron-deficiency Anemia patients fulfilling the stipulated inclusion criteria were included; 30 forms were disqualified due to the fact that some patients did not share their information on demographic sheet. Remaining participants' data was included to generate the results. Almost half of the participants were male while other half was of females. The mean age of the sample was 24.21 (±2.13) years. 70.7% (n=212) of the respondents maintained that they had to pay frequent visits to hospitals/ clinic or health tertiary care set ups due to complications of Anemia. The leading complaints reported by patients due to Anemia included 64.3% (n=193) itching, 62.7% (n=188) swelling, 50.7% (n=127) blood transfusion, and 51.0% (n=153) family history of anemia. Only 12 respondents reported physical exercise.

Fig. 2 showed that 62.3% (n=25) reported receiving partial family support, 23% (n=9) cited moderate support, and 14.4% (n=6) reported profound social and familial support.

Analysis discloses that around 43.3% of the respondents had poor general health while 55.6% regarded their health as more declined than a year ago. 60.6% described restraints in their physical activities, such as brisk walks, running, being a

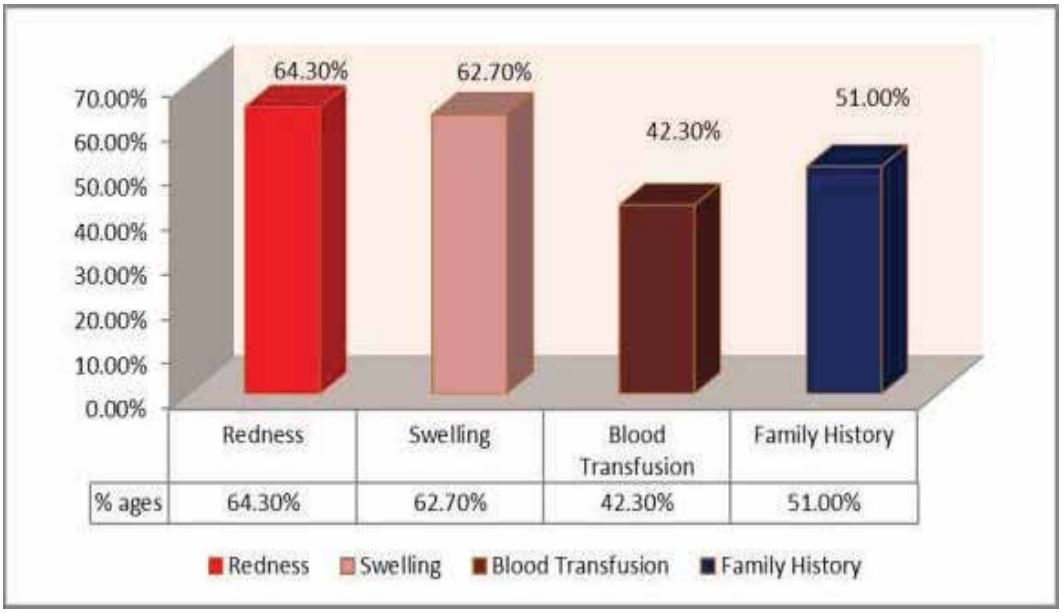

Fig. 1. Clinical Signs and Symptoms of Anemia

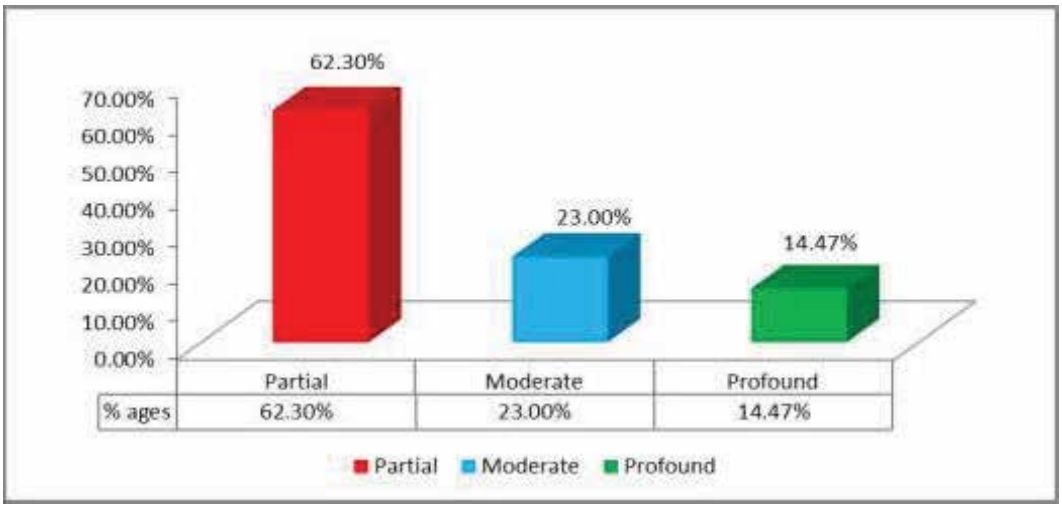

Fig. 2. Social and Familial Support

part of active work, carrying objects with moderate weights that they had managed well earlier in their lives, exhaustion and fatigue while 49% reported limitation of moderate activities, such as dislocating the table, carrying a bucket etc. Further, 72.6% recounted limitations in lifting or carrying groceries, 61.6% reported limitations in climbing flights of stairs, 69.6% reported limitation in climbing one flight of stairs, 69% reported limitation when bending, kneeling, or stooping, 54.6% reported limitation when walking more than a mile, 76.6% reported limitation when walking several blocks, 53% reported limitation when walking one block, and 68.6% reported limitation when self-bathing or dressing.

4. DISCUSSION

This empirical study uses Health survey Form-HSF (shorter version) and it's associated subscales for highlighting the health related quality of life for patients with iron deficiency Anemia. Moreover, gender differences in symptoms, associated complications and health related quality of life were investigated in a relatively large sample of Pakistani adults with iron deficiency anemia who had been attending the Hematology Outpatient Clinics in Lahore, Pakistan. The male sample comprised of 51% anemia patients and the female sample involved 49% anemia patients. Predominantly the sample contained relatively young adults at reported mean age of 24.21 years (standard deviation of ±2.13).

The focal analysis of current investigation focused on finding associations between anemia related symptoms, complications and reported quality of life with reference to gender. It was found that there were marked differences in reported symptoms of anemia across male and female. Females reported predominant changes in thermic states, such as fevers, tended to report intense swelling, and had gone through more episodes of blood transfusion than males. These findings are in alignment to empirical findings by Lionnet et al [20] according to which anemia complications were much more frequently evident in female patients than their male counterparts. Similarly, Dauphin-McKenzie et al [21] reported that females with iron deficiency anemia experienced multiple complications which were severe than their male counterparts. There were marked differences in anemia reporting age with reference to gender as females reported more iron-deficiency Anemia in their reproductive years. This finding corroborates National Health Survey of Pakistan (NHSP) estimates. According to that the prevalence of anemia in Pakistan systematically varied from male to female as females reporting deficiency at younger reproductive years [22].

The study under focus also revealed that females tend to have more limitations in lifting or carrying mild to moderately heavier groceries than males which is perhaps more to be attributed to societal and social normative patterns that female in Pakistan are not assumed to lift heavy things. Thus this finding is not be attached with some evidential baselines rather is reported due to cultural differences. This was further established from current findings that Pakistani females tend to climb flight of stairs or walk one block with efforts and henceforth avoided that. This denotes decreased patterns of activities and highlights their actual restricted patterns of movement. In this regard, this is suggested that cultural considerations should be given much attention by modifying the SF-36 to fit the Pakistani population and other conservative Muslim populations wherein women are not presumed to move a lot outside of their homes and are not expected to be a part of taxing physical activities.

The juxtaposition of activity levels exposes that Pakistani females report much frailty than males. This was in alignment with a previous empirical work that female tends to diminish vitality scale scores with aggravation of Anemia related symptoms [23]. It was specifically noted that females were much more likely to maintain somatic pains than males. For instance, more intense pain was observed among females in some investigations conducted in developing countries on Anemia among females. Some studies described pain intensity in hospitalized patients with acute, painful Iron deficiency episodes as being higher among females [24]. A study investigating HR-QoL among adolescents, conducted at limited scale, revealed that in Pakistani adolescents HR-QoL scores were negatively linked with the psychological well-being in females and they had greater tendency to report pains and spasms [25]. Likewise patients suffering with iron deficiency Anemia also reported

poorer well-being and physical functioning and had tendency to undermine their physical functioning.

The current investigation therefore, highlights key differences between male and female in iron deficiency Anemia. Accumulative analyses reveal that females report more complaints and complications of iron-deficiency Anemia. The general reported health state is evident as more poor among females than males. The strength of current research is systematic unraveling the dimensions of Anemia. The findings carry significant line of directions for future researchers to focus more age related investigations to highlights the issues with respect to specific ages. Another promising thing highlighted through this research is addressing the targeting complaints of sufferer after probing them through Health form. However there are certain limitations in this investigation such as targeting only urban areas due to limitation of resources in data collection. Representation of the larger Iron Deficiency Anemia population may yield more generalizable findings. Inclusion of longitudinal data likewise may extend more convincing results. The findings must be validated by utilizing different measures and scales in order to validate the evidences.

5. CONCLUSIONS

This is generally observed that there are significantly marked limitations in daily life activities of Pakistani females with iron deficiency Anemia. The study also contributes comprehensively that Pakistani women with anemia suffered with Anemia-related complications, symptoms' aggravation and pain which was experienced differently from Pakistani men with iron-deficiency anemia. The patterns of complications for females were temperature-irregularities including fever, inflammation, edema and constrained physical activities than males. This implies that psycho-education program must be made mandatory in addition to interventional program required to address QoL among Pakistani females with anemia. This could enhance their quality of life and would increase their physical and psychological well-being.

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