

# The Prevalence of Physical Disability in a Group of Elderly People Attending Primary Health Care Centers in Baghdad

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## Abstract:

**Background:** The proportion of the elderly throughout the world is continuously increasing, and becoming a challenge, due to the increasing number of the disabled and the rise of the national health burden. There is a greater need to look into their physical disability aspects, which are widely neglected.

**Objectives:** To estimate the prevalence of Activity of Daily Living dependency (ADL) among elderly people attending primary health care centers (PHCs) in Al Resafa health sector in Baghdad, and to explore the association between dependency and some socio-demographic factors.

**Method:** A Descriptive cross-sectional study was carried out in all PHCs in Al Resafa health sector in Baghdad where 250 elderly clients were interviewed using a pretested questionnaire which covered some Socio-demographic factors and Barthel index scale (a 10 item instrument measuring functional independence in personal Activities of Daily Living).

**Results:** Those interviewed were 60 years or older, of whom those between 60 - 69 years were 47.6%, and few were 80 years or older. There were slightly more females than males (51.6% vs 48.4%). Most of participants (97.6%) were living with their families, 82% were not currently employed, and 48% over weight. According to Barthel index scale score: 78.0% were independent while ADL with assistance observed in 15.2% and those of ADL with severity were 6.8%. There was a significant association between increase in age, female gender, low education and obesity and a decrease in ADL.

**Conclusion:** Preserving functional capacity among the elderly is a great challenge to public health. Subjects' categorization on the basis of Barthel index to correlate functional disability is of value for a better quality of life

**Keywords:** Physical disability, Activity of Daily Living, Barthel index, elderly

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## Introduction:

Ageing is a natural course of dynamic biological changes that is also subject to social construction in the determination of its reality and meaning. Hence, the definition of old age (based on changes in chronological age and functionality) varies across societies and cultures. For example, in many developing countries, the elderly is defined as those who are 60 years old or above, while in most developed countries the cutoff-point is 65 years (1,2).

From year 2000 onward, the demographic change in the proportion of older population throughout the world is continuously increasing and is becoming a challenge worldwide, in both developed and developing countries (3). In the year 2013, the world ageing population was 11.7% (841 million) and is

expected to rise to 21.1% (2 billion) in 2050 (4). The same trend is also predicted in Eastern Mediterranean region (EMR) where the proportion of the elderly to the total population was 5.8% in 2000 and is expected to reach 8.7% in 2025 and 15% by 2050 (5). In Iraq (the cutoff-point is 60 years) the proportion of elderly population was 5% in 2015 and expected to reach 7.2% in 2050 (6).

An individual with disability is defined as a person who has "long term physical, mental, intellectual or sensory impairments or some combination of these which in interaction with various barriers may restrict their full and effective participation in society (7). With the rise in aged population there is a great need to look into their physical disability aspects, which is otherwise neglected (8). Several studies confirmed the association between disability and ageing (8-10). These disabilities can be assessed through the activities of daily living (ADL), and instrumental activities of daily living (IADL). ADL are routine tasks performed by each individual on a daily basis that are essential to independent living without any assistance, and involve

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self-care and mobility(8).A person's ability in performing ADL is important in determining their long term care and coverage of their needs(9).IDAL are activities that are needed to live independently (e.g. doing housework, taking medication, properly managing finances)(8). In order to assess this dependency, various assessment tools for ADL have been developed.(Barthal index , Katz index,Lawton instrumental ADL)(8,10,11).

**Aim of study:**

1. To determine the prevalence of ADL dependency using BarthelIndex(BI) among elderly in primary health care centers (PHCs)in Al Resafa health sector.
2. To explore associationsbetween ADL dependency and some socio-demographic factors

**Patients and methods:**

**Study design:** A descriptive, cross- sectional study was conducted from 1<sup>st</sup> March to 30<sup>th</sup> June 2018.The data was collected from all10 PHCs in Al Resafa sector for primary health care /Baghdad.A convenient sample of 250 elderly people (25 elderly from each PHC center) 60 years old or above being a patient or companion to a patient, males and females were enrolled in the study. ADL is defined as routine tasks performed by each individual on a daily basis that are essential to independent living without any assistance, and involve self-care and mobility(8)

**The questionnaire of the study:** The data was collected using a specially designed questionnaire consisting of:

Section1:

Socio-demographic characteristics for participants {which include age, gender, marital status, living status(alone or with family), currently employed, income status(self or family dependent), educational level}

Presence of chronic disease in elderly,

Weight and height to calculate body mass index (BMI) (underweight<18.5,normal 18.5-24.9,overweight 25.0-29.9, obese30.0-39.9, and grossly obese ≥40.0) (12)

Smoking:

A- Smoker: Current smoker(on daily / nondaily basis); ex-smoker(smoked at least 100 cigarettes in their lifetime, but currently do not smoke,who had quitted smoking at time of interview)

B- Non-smoker (never smoked a cigarette or who smoked fewer than 100 cigarettes in their entire lifetime) (13).

Section2:Barthalindex scale: is a 10 item instrument measuring functional independence in personal activities of daily living (ADL), it consist of self-care (feeding, bathing, grooming, dressing, bowel control, bladder control, toilet use), mobility restriction (transfers from bed to chair and back, mobility on leveled surfaces, stairs). Each item in Barthel index scale has its score, the sum of scores of all items taken,

total possible scores range from 0-100, lower scores indicate increasing disability the severity of disability can be categorized into four level. (14)

- 80 -100 independent

ADL with assistance:

- 60 -79 minimal dependent

- 40 - 59 partially dependent

**ADL with severity:**

- 20- 39 very dependent

- < 20 totally dependent

**Data analysis:** The statistical package for social sciences version 24 (SPSS v24) used to analyze data. The Chi square test was used to measure the association between demographic variables and activity level.The level of significance was set at 0.05.

**Results:**

Out of250 participants, 119 participants (47.6%) were 60 - 69 years old, 129 (51.6%) were females, 180(72%)were married, 244 (97.6%) were living with family, 205 (82%) were not currently employed, 134(53.6%)have their own income and79(31.6%) had an educationallevel higher than secondary (diploma or higher)(table 1)

**Table 1: Socio-demographic characteristics of the participants**

| Variables          | Category   | N=250 | %    |
|--------------------|------------|-------|------|
| Age Group          | 60-69 y    | 119   | 47.6 |
|                    | 70-79 y    | 113   | 45.2 |
|                    | ≥ 80 y     | 18    | 7.2  |
| Gender             | Male       | 121   | 48.4 |
|                    | Female     | 129   | 51.6 |
| Marital Status     | Single     | 8     | 3.2  |
|                    | Married    | 180   | 72.0 |
|                    | Widow      | 60    | 24.0 |
| Living in company  | Divorced   | 2     | 0.8  |
|                    | Yes        | 244   | 97.6 |
|                    | No         | 6     | 2.4  |
| Currently employed | Yes        | 45    | 18.0 |
|                    | No         | 205   | 82.0 |
| Source of income   | Self       | 134   | 53.6 |
|                    | Family     | 116   | 46.4 |
|                    | Illiterate | 75    | 30.0 |
| Education level    | Primary    | 56    | 22.4 |
|                    | Secondary  | 40    | 16.0 |
|                    | Higher     | 79    | 31.6 |

Regarding smoking history, only 28 (11.2%) participants expressed either current or previous tobacco smoking and 198 (79.2%) had more than one disease and 120 (48%) were overweight, (table 2).

**Table 2: Lifestyle and health characteristics of the participants**

| Variables       | Category             | N=250 | %    |
|-----------------|----------------------|-------|------|
| Smoking history | Current or ex-smoker | 28    | 11.2 |
|                 | Underweight          | 17    | 6.8  |
| BMI Category    | Normalweight         | 91    | 36.4 |
|                 | Overweight           | 120   | 48   |
|                 | Obese                | 22    | 8.8  |
| Chronic dis     | no dis               | 7     | 2.8  |
|                 | .1 dis               | 45    | 18   |
|                 | ≥ 2dis               | 198   | 79.2 |

Responses of questions of activity level (table 3) were as follow: 15 (6.0%) unable to self-feed; Bathing: with help in 30 (12%); Grooming: with help in 30 (12%); Dressing: dependently in 14 (5.6%); Bowel is continent in 220 (88%), with occasional accidents in 25 (10%); Bladder: with occasional accidents in 42 (16.8%), and incontinent or catheterized in eight (3.2%); Toilet use: Dependent in 11 (4.4%), a need for help in 39 (15.6%); Chair transfer: responses were unable in 10 (4.0%), sit with major help in 24 (9.6%), sit with minor help in 40 (16%); Mobility: immobility was observed in 7 (2.8%), can move in a Wheelchair independently for more than 50 yards in 17 (6.8%); and Stairs: not able to use (23.6%) or needs help (27.2%), (table 3).

**Table 3: Participants' responses to activity level questions**

| Domain   | Activity level             | N=250 | %    |
|----------|----------------------------|-------|------|
| Feeding  | Unable                     | 15    | 6.0  |
|          | Independent                | 201   | 80.4 |
| Bathing  | Dependent                  | 30    | 12.0 |
|          | Independent (or in shower) | 220   | 88.0 |
| Grooming | Needs Help                 | 30    | 12.0 |
|          | Independent                | 220   | 88.0 |
|          | Dependent                  | 14    | 5.6  |
| Dressing | Half unaided               | 40    | 16.0 |
|          | Independent                | 196   | 78.4 |
|          | Incontinent                | 5     | 2.0  |

|                |   |     |      |
|----------------|---|-----|------|
| Bowels         | Occasional accident                       | 25  | 10.0 |
|                | Continent                                 | 220 | 88.0 |
|                | Incontinent/Catheterized                  | 8   | 3.2  |
| Bladder        | Occasional accident                       | 42  | 16.8 |
|                | Continent                                 | 200 | 80.0 |
| Toilet Use     | Dependent                                 | 11  | 4.4  |
|                | Needs Help                                | 39  | 15.6 |
|                | Independent                               | 200 | 80.0 |
|                | Unable                                    | 10  | 4.0  |
| Chair Transfer | Sit with major help                       | 24  | 9.6  |
|                | Sit with minor help                       | 40  | 16.0 |
|                | Independent                               | 176 | 70.4 |
|                | Immobility or < 50 yards                  | 7   | 2.8  |
| Mobility       | Wheelchair independent for >17 50 yards   | 17  | 6.8  |
|                | Walk with help of one person >39 50 yards | 39  | 15.6 |
|                | Walk independent > 50 yards               | 187 | 74.8 |
|                | Unable                                    | 59  | 23.6 |
| Stairs         | Needs help                                | 68  | 27.2 |
|                | Independent                               | 123 | 49.2 |

Regarding Barthel Scale, 195 (78.0%) of the sample scored ≥ 80 (independently active people), 38 (15.2%) were ADL with assistance (score 40 - 79), and 17 (6.8%) were ADL with severity (score < 40), (Table 4)

**Table 4: Proportions of levels of daily activity in studied sample:**

| Categorization according to Barthel Scale | 95% CI |      |       |       |
|---|--------|------|-------|-------|
|   | N=250  | %    | Lower | Upper |
| Independent                               | 195    | 78.0 | 72.3  | 82.9  |
| ADL with assistance                       | 38     | 15.2 | 11.1  | 20.4  |
| ADL with severity                         | 17     | 6.8  | 4.1   | 10.9  |

There is a significant association between increase in age, family support as a source of income and obesity with decrease in activity level ( $P < 0.05$ ). Female gender is significantly associated with decrease in ADL with a female predominance increasing from 57.9% in need for assistance to 88.2% in ADL with severity ( $P < 0.05$ ). Being married and currently employed are significantly associated with better levels of ADL ( $P < 0.05$ ). Better education is significantly associated with better ADL as those with diploma level or higher being more independent ( $P < 0.05$ ) (tables 5,6)

**Table 5: Distribution of participants according to activity level and socio-demographic characteristics**

| Variables                 | Activity Level according to Barthel Scale |       |                             |                         |                  |      | P value       |
|---------------------------|---|-------|-----------------------------|-------------------------|------------------|------|---------------|
|                           | Independent<br>N=195                      | ADL % | with<br>Assistance<br>N=38% | ADL<br>Severity<br>N=17 | with<br>Severity |      |               |
| <b>Age Group</b>          |   |       |                             |                         |                  |      | <b>0.0001</b> |
| ● 60-69 y (N=119)         | 114                                       | 95.8  | 5                           | 4.2                     | 0                | 0    |               |
| ● 70-79 y (N=113)         | 76  | 67.3  | 28                          | 24.8                    | 9                | 8.0  |               |
| ● ≥ 80 y (N=18)           | 5   | 27.8  | 5                           | 27.8                    | 8                | 44.4 |               |
| <b>Gender</b>             |   |       |                             |                         |                  |      | <b>0.004</b>  |
| ● Male (N=121)            | 103                                       | 85    | 16                          | 13.1                    | 2                | 1.9  |               |
| ● Female (N=129)          | 92  | 71.3  | 22                          | 17                      | 15               | 11.7 |               |
| <b>Marital Status</b>     |   |       |                             |                         |                  |      | <b>0.0001</b> |
| ● Married (N=180)         | 154                                       | 85.6  | 22                          | 12.2                    | 4                | 2.2  |               |
| ● Others (N=70)           | 41  | 58.6  | 16                          | 22.8                    | 13               | 18.6 |               |
| <b>Living in company</b>  |   |       |                             |                         |                  |      | 0.420         |
| ● Yes (N=244)             | 189                                       | 77.4  | 38                          | 15.6                    | 17               | 7    |               |
| ● No (N=6)                | 6   | 100   | 0                           | 0                       | 0                | 0    |               |
| <b>Currently employed</b> |   |       |                             |                         |                  |      | <b>0.006</b>  |
| ● Yes (N=45)              | 43  | 95.5  | 2                           | 4.5                     | 0                | 0    |               |
| ● No (N=205)              | 152                                       | 74.1  | 36                          | 17.6                    | 17               | 8.3  |               |
| <b>Source of income</b>   |   |       |                             |                         |                  |      | <b>0.003</b>  |
| ● Self (N=134)            | 115                                       | 85.8  | 15                          | 11.2                    | 4                | 3    |               |
| ● Family (N=116)          | 80  | 69    | 23                          | 19.8                    | 13               | 11.2 |               |
| <b>Education level</b>    |   |       |                             |                         |                  |      | <b>0.002</b>  |
| ● Illiterate (N=75)       | 54  | 72    | 16                          | 21.3                    | 5                | 6.7  |               |
| ● Primary (N=56)          | 41  | 73.2  | 7                           | 12.5                    | 8                | 14.3 |               |
| ● Secondary(N=40)         | 29  | 72.5  | 11                          | 27.5                    | 0                | 0    |               |
| ● Higher (N=79)           | 71  | 89.8  | 4                           | 5.1                     | 4                | 5.1  |               |

**Table 6: Distribution of participants according to activity level and to lifestyle and health characteristics**

| Variables                         | Activity Level according to Barthel Scale |       |                             |                         |                  |      | P value      |
|-----------------------------------|---|-------|-----------------------------|-------------------------|------------------|------|--------------|
|                                   | Independent<br>N=195                      | ADL % | with<br>Assistance<br>N=38% | ADL<br>severity<br>N=17 | with<br>severity |      |              |
| <b>Smoking history</b>            |   |       |                             |                         |                  |      | 0.910        |
| ● Positive*(N=28)                 | 21  | 75    | 5                           | 17.9                    | 2                | 7.1  |              |
| ● Never (N=222)                   | 174                                       | 78.4  | 33                          | 14.9                    | 15               | 6.7  |              |
| <b>BMI Category</b>               |   |       |                             |                         |                  |      | <b>0.008</b> |
| ● Underweight(N=17) <sup>7</sup>  | 7   | 41.2  | 8                           | 47.1                    | 2                | 11.7 |              |
| ● Normal weight(N=91)             | 65  | 71.4  | 18                          | 19.8                    | 8                | 8.8  |              |
| ● Overweight(N=120) <sup>90</sup> | 75  | 75    | 17                          | 14.2                    | 13               | 10.8 |              |
| ● Obese(N=22)                     | 15  | 68.2  | 3                           | 13.6                    | 4                | 18.2 |              |
| <b>Chronic dis</b>                |   |       |                             |                         |                  |      |              |
| ● No dis.(N=7)                    | 7   | 100   | 0                           | 0                       | 0                | 0    |              |
| ● 1dis.(N=45)                     | 35  | 18    | 7                           | 18.4                    | 3                | 17.6 |              |
| ● ≥2 dis.(N=198)                  | 153                                       | 78.5  | 31                          | 81.6                    | 14               | 82.4 |              |

\*Positive if current or ex-smoker.

### Discussion

Physical disability exerts an important influence on the quality of life of older adults, including on other health conditions and the practice of physical activity. Since the study is PHC center based, the age group (60-69 years) was the most frequently encountered in the sample because this age group has less disability than older groups and they can easily reach the PHCC. The proportion of females was larger than males, proportionate with the general distribution of females in older populations (3), a finding that is similar to a European study in 2001(15).

More than two thirds were currently married and 97.6% were living with family members, which is a cultural norm in Iraq. In a European study (15) the proportion of those with disability living alone was significantly higher than those living with relatives. The high percentage of those who never smoked (88.8%) may be due to female predominance or to quitting due to their chronic diseases. Another study in Iraq in 2015 showed that 70% were smokers (16). More than half are overweight and obese which is consistent to a European study conducted in 2013(17). Using (Barthel Index score) showed that more than ¾ were independent in 7 items of ADL self-care, while for mobility items of ADL they were independent in more than two thirds

while those who are able to use stairs represented less than half of the sample. Similar findings were reported by a study in urban Dehradun / northwestern region of India (18) and Nigeria (10). In contrast, a higher dependency for baths has been reported in several studies (19,20) and 100% bowel continent and lowest for climbing stairs 47.4% in study in India (21). This difference is due to that this study is PHCCs based and the other studies were population based. Based on the 10-item Barthel Index score, the prevalence of physical disability in this study was 22% ADL with assistant and with severity. This reflects a good ability of most of attendees to reach the PHCCs, while the severe and total ADL dependent are scarcely seen in PHCs as their disability may prevent them from doing so. A study in Singapore found a much lower disability prevalence than our study (11%) in people aged 60 years or above (22). In a study in the USA it was (15%)(23), in central India ADL with severity was (13.5%)(21), in Malacca (24.7%)(24), in rural areas of district Jhansi (U.P) India the overall prevalence of physical disability was (23.4%)(8). In European countries 26% had mild disability and 9% had severe disability (15). There was a significant association between increasing age and the decrease in activity level, because aging is characterized by a progressive loss of physiological integrity, leading to impaired functions and higher vulnerability to disability, which has been demonstrated by studies from Kuwait (25), in Mexico (26), India (8), and Tanzania (27).

ADL with assistant and ADL with severity were significantly associated with being a female, which is in line with previous studies from Nigeria (10), Tanzania (27), Bangladesh (28), and Germany (29). Social and health related issues largely contribute to the higher prevalence of disability among women such as early maternal age at first birth, chronic conditions, greater female longevity, possible exposure to domestic violence, gender inequalities and less adequate care and services for pregnant/delivering mothers (30,31). More than three quarter of ADL with severity are (divorced or widowed). A reduction in the size of families and the increase in divorce and separation, can weaken family ties. The family system still remains a safe haven for its members and the main source of support for maintaining the quality of life of these individuals. Similar results were found in a population-based study in the Southeast region of Brazil(32). The majority of those independent (77.9%) and all of ADL with severity are not currently employed, an unexpected result because retirement usually happens after the age of 60, and so family source as an income to elderly increases as their activity decrease which is similar to study in Bangladesh (33) and India (8). Higher education is less observed in decreased activity level. Lack of/lower education is often associated with low income and poverty, lower standards of living, unhealthy lifestyle,

unhealthy diet and less frequent use of health care services. Similar results were found by in studies in Tehran, Iran (35) and Malaysia(35). BMI was found to be significantly associated with the level of physical activity which can be attributed to chronic conditions (diabetes, cardiovascular disease, osteoarthritis) being associated with obesity. Similar result were found in a study where obese older adults had a two-fold greater odds of impairments in basic activities of daily living compared to normal weight older adults(9). For obese individuals, physical disability seems to be impacted primarily through osteoarthritis (36) as suggested by a study from Nigeria (10) and sedentary life style as suggested by studies from Baghdad (16) and Korea (37). Being a PHC based study underestimate the prevalence of ADL dependency, the analyses might give more significant finding if the study was population based including more areas in sampling frame and the elderly in institutionalized care.

#### **Conclusion:**

Preserving functional capacity of elderly is a great challenge to public health, hence it is important to implement strategies to meet the needs of factors related to functional disability. It will be worthwhile to initiate a primary prevention strategy to improve ADL performance together with secondary and tertiary health care, and so subjects' categorization on the basis of Barthel index to correlates functional disability will be of value for a better quality of life.

#### **Authors' contributions:**

All authors equally contributed to the design, data collection, data analysis and writing of the final article.

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مدى انتشار الإعاقة الجسدية عند كبار السن في مراكز الرعاية الصحية الأولية في قطاع الرصافة، بغداد  
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**الخلفية:** تتزايد نسبة كبار السن في جميع أنحاء العالم باستمرار، ويصبح هذا التغير الديموغرافي تحدياً في جميع أنحاء العالم، لأنه قد يؤدي إلى زيادة الإعاقة وزيادة العبء الصحي الوطني، وبالتالي هناك حاجة أكبر للنظر في جانب الإعاقة الجسدية، والتي تكون على خلاف ذلك مهمة.

**الأهداف:** لتقدير مدى انتشار الإعاقة الجسدية بالاعتماد على الاستقلال الوظيفي في الأنشطة الشخصية للحياة اليومية لكبار السن المراجعين في مراكز الرعاية الصحية الأولية في قطاع الرصافة، وإيجاد العلاقات بين هذه الأنشطة مع بعض العوامل الاجتماعية والديموغرافية.

**طريقة البحث:** أجريت دراسة مقطعية وصفية في جميع مراكز الرعاية الصحية الأولية في قطاع الرصافة وتمت مقارنة 250 من كبار السن باستخدام استبيان أعد لهذا الغرض والذي غطى بعض العوامل الاجتماعية والديموغرافية بالإضافة إلى مقياس مؤشر بارثل (المكون من 10 عناصر تقيس الاستقلال الوظيفي في الأنشطة الشخصية للحياة اليومية).

**النتائج:** كان جميع المشاركين يبلغون من العمر 60 عاماً وما فوق، وشكلت تراوح أعمارهم بين 60 إلى 69 عاماً 47.6% من المشاركين، وكانت الإناث المسنات أكثر قليلاً من الذكور (51.6%، 48.4%). كان معظم المشاركين 97.6% يعيشون مع عائلاتهم، وكان 82.0% منهم بدون عمل حالياً، وكان 48% يعانون من زيادة الوزن. وفقاً لدرجة مقياس مؤشر بارثل: 78.0% كان لديهم استقلال وظيفي في الأنشطة الشخصية للحياة اليومية في حين 15.2% كانوا بحاجة إلى مساعدة وكان 6.8% يعانون من شدة في الأنشطة الشخصية للحياة اليومية. كان هناك ارتباط كبير بين الزيادة في العمر، الجنس الأنثوي، انخفاض مستوى التعليم والسمنة مع انخفاض الاستقلال الوظيفي في الأنشطة الشخصية للحياة اليومية.

**الاستنتاج:** يمثل الحفاظ على القدرة الوظيفية للمسنين تحدياً كبيراً للصحة العامة، وتصنيف القدرات على أساس مقياس مؤشر بارثل لربط العجز الوظيفي سيكون ذا قيمة لحياة أفضل.

**كلمات مفتاحية:** الإعاقة الجسدية، نشاط الحياة اليومية، مؤشر بارثل، كبار السن