

Lower Urinary Tract Symptoms and Overactive Bladder among Female Vocational Divers (Haenyeo)

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Topic/Introduction: Haenyeo, “sea women” in Korean, dive into the sea by implementing breath holds without mechanical equipment to collect seafood. Unfortunately, breath-holding diving causes decompression sickness symptoms. As a result, Haenyeo are living with musculoskeletal problems such as chronic arthralgia and muscle weakness.

Objectives: This study aimed to assess overactive bladder (OAB) and lower urinary tract symptoms (LUTS) among Haenyeo and identify the associated factors of OAB and LUTS.

Methodology: A community-based cross-sectional study was conducted from September 2020 to April 2021. One hundred thirty-eight participants aged 65 and over were recruited from two fishing-village societies in Jeju Island. A structured questionnaire was used to guide interviews and the data were collected, including demographic characteristics, LUTS (International Prostate Symptom Score [IPSS]), OAB (measured via the 3-item OAB awareness tool), osteoarthritis symptoms (Western Ontario and McMaster Universities Arthritis Index, [WOMAC]), and swallowing function (14-item chewing and swallowing function instrument). Pearson correlation analysis was used to test the associated factors of LUTS and OAB.

Results: The mean age of 138 subjects in the study was 72.17±5.21 years old. The mean LUTS (IPSS) score was 3.39±3.65 (range 0-35); mild LUTS was 86.2%, moderate LUTS 13.8%, and OAB score 0.67±1.44 (range 0-15). LUTS was significantly correlated with osteoarthritic symptoms ($r=.32, p=.001$) and swallowing function ($r=.26, p=.001$). OAB was significantly correlated with age ($r=.30, p=.001$), working years of vocational diver ($r=.27, p=.001$), osteoarthritic symptoms ($r=.36, p<.001$), and swallowing function ($r=.27, p=.002$).

Conclusions: LUTS and OAB scores of subjects showed a low level. LUTS and OAB were correlated with osteoarthritic symptoms and swallowing function.

Key Words: Diving, Lower urinary tract symptoms, Overactive bladder, Joint pain

Table 1. General characteristics of subjects (N=138)

| Characteristics | Categories | n (%) | Mean±SD |
|---|--------------------------------------|------------|---------------------------------|
| Age (yr) | 65-74 | 99 (71.7) | 72.17±5.21 |
| | ≥75 | 39 (28.3) | (range 65 ~ 86) |
| Educational level (missing data=2) | ≤Elementary school | 53 (39.0) | |
| | ≥Middle school | 83 (61.0) | |
| Marital status | Married | 107 (77.5) | |
| | Divorce/widow | 31 (22.5) | |
| Job | Vocational diver + dry field farming | 101 (73.2) | |
| | Vocational diver only | 37 (26.8) | |
| Working years of vocational diver (missing data=2) | | | 46.29 ± 8.65 (range 30 ~ 70) |
| Chronic disease | No | 24 (17.4) | |
| | Yes | 114 (82.6) | |

Table 2. Score and Severity of Lower Urinary Tract Symptoms, Overactive Bladder, Osteoarthritis Symptoms, and Swallowing Function (N=138)

| Variables | N (%) | Mean±SD | Range |
|---------------------------------------|------------|-------------|-------|
| Lower urinary tract symptoms (IPSS) | | | |
| Severity of the LUTS | | | |
| Mild (0-7) | 119 (86.2) | | |
| Moderate (8-19) | 19 (13.8) | | |
| Each symptom score of the LUTS | | | |
| Incomplete emptying of bladder | | 0.42±0.68 | 0-5 |
| Frequency | | 0.23±0.50 | 0-5 |
| Urgency | | 0.38±0.65 | 0-5 |
| Intermittency | | 0.22±0.60 | 0-5 |
| Weak stream | | 0.24±0.67 | 0-5 |
| Hesitancy | | 0.25±0.58 | 0-5 |
| Nocturia | | 1.65±1.15 | 0-5 |
| Total LUTS score | | 3.39±3.65 | 0-35 |
| Overactive bladder | | 0.67±1.44 | 0-15 |
| No (0-3) | 134 (97.1) | | |
| Yes (≥4) | 4 (2.9) | | |
| Swallowing function | | 1.66±2.52 | 0-42 |
| Normal function | 134 (89.9) | | |
| Dysfunction | 14 (10.1) | | |
| Osteoarthritis symptoms (WOMAC score) | | 23.36±19.10 | 0-96 |
| Pain | | 4.74±4.47 | 0-20 |
| Stiffness | | 2.28±1.77 | 0-8 |
| Physical function | | 16.33±13.46 | 0-68 |



Table 3. Correlation between Lower Urinary Tract Symptoms and Research Variables

| Variables | Age r (p) | Working years of vocational diver r (p) | Osteoarthritis Symptoms (WOMAC) | | | | Swallowing function r (p) |
|------------------------------|---------------|--|---------------------------------|--------------------|----------------------------|----------------|---------------------------------|
| | | | Pain r (p) | Stiffness r (p) | Physical function r (p) | Total r (p) | |
| Lower urinary tract symptoms | .14 (.113) | .14 (.115) | .34 (<.001) | .33 (<.001) | .29 (.001) | .32 (.001) | .26 (.002) |

WOMAC: The Western Ontario and McMaster Universities Arthritis Index

Table 4. Correlation between Overactive Bladder and Research Variables

| Variables | Age r (p) | Working years of vocational diver r (p) | Osteoarthritis Symptoms (WOMAC) | | | | Swallowing function r (p) |
|--------------------|---------------|--|---------------------------------|--------------------|----------------------------|----------------|---------------------------------|
| | | | Pain r (p) | Stiffness r (p) | Physical function r (p) | Total r (p) | |
| Overactive bladder | .30 (.001) | .27 (.001) | .36 (<.001) | .41 (<.001) | .34 (<.001) | .36 (<.001) | .27 (.002) |

References

- Seo JY, Ha KY, Kim YH, Kim SC, Yoon EJ, Park HY. Bone Mineral Density and Osteoporotic Vertebral Fractures in Traditional, Unassisted, Free-Diving Women (Haenyeos). *J Korean Med Sci.* 2018;33(48):e316.
- Lee JY, Park J, Kim S. Cold adaptation, aging, and Korean women divers haenyeo. *J Physiol Anthropol.* 2017;36(1):33.

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