PATIENT SATISFACTION, FALL PREVENTION, AND MAINTENANCE OF SKIN INTEGRITY ARE CONCERNS THAT SPAN THE CONTINUUM OF CARE. AS PATIENTS BECOME LESS MOBILE DUE TO DECLINE IN HEALTH STATUS SEATING BECOMES A MAJOR INTERVENTION IN THEIR DAILY LIVES. FALLS, PAIN AND PRESSURE ULCERS CAN BE ASSOCIATED WITH INEFFECTIVE SEATING. ECONOMICAL CONSTRAINTS LIMIT THE SEATING PRODUCTS CHOICE AVAILABLE IN HOSPITALS, OUTPATIENT FACILITIES, LONG-TERM CARE FACILITIES, AND HOME CARE SETTINGS. QUALITY OF CARE IS IMPACTED BY THE QUALITY OF SEATING. ECONOMIC PRINCIPLES SHOULD SERVE AS A GUIDE TO EFFECTIVE SEATING IN MEDICAL SETTINGS AND CARE REGIMENS. THIS STUDY DEMONSTRATES THE VALUE OF HIGH-SPECIFICATION FOAM PRODUCTS THAT HAVE BEEN STRUCTURED FOR POSTURAL SUPPORT AS WELL AS SKELETAL OFF-LOADING. HIGH-SPECIFICATION FOAM PRODUCTS ARE STRUCTURED WITH VARIOUS FOAM CONFIGURATIONS AND GRADES OF FOAMS THAT ARE INTENTIONALLY PLACED TO ADDRESS SKELETAL WEIGHTING ZONES AND STATIC FORCES. THE FOLLOWING STUDY RESULTS REPORT ON THE IMPLEMENTATION OF A HIGH-SPECIFICATION FOAM SUPPORT SYSTEM DESIGNED TO FIT A STANDARD GERI SCHAIR.

PURPOSE

ESTABLISH THE EFFECT OF A HIGH-SPECIFICATION FOAM GERI CHAIR SUPPORT SURFACE ON THE SAFETY, COMFORT AND SKIN INTEGRITY OF INDIVIDUALS CONFINED TO A STANDARD GERI CHAIR SEATING SYSTEM.

METHODS

A SEARCH OF CURRENT EVIDENCE-BASED LITERATURE ON SUPPORT SURFACES CLINICAL EFFICACY WAS CONDUCTED THROUGH PUBLISHED AND REVEALED INSUFFICIENT EVIDENCE FOR THE DEMONSTRATION OF BEST PRACTICE OFF-LOADING DEVICES FOR PRESSURE ULCER PREVENTION AND TREATMENT ON CHAIRS, YET SUPPORTED THE NEED FOR PRESSURE REDISTRIBUTION EQUIPMENT FOR DEBILITATED INDIVIDUALS. A PROPOSAL FOR THE STUDY OF A NEW HIGH-SPECIFICATION FOAM SUPPORT SURFACE FOR A STANDARD GERI SCHAIR WAS SUBMITTED AND APPROVED BY THE ETHICS COMMITTEE OF A LARGE NON-PROFIT HOSPICE AGENCY.

SUBJECTS FOR THE STUDY WERE SELECED FROM THIS HOSPICE AGENCY OVER A FOUR MONTH PERIOD, THEN OVER THE NEXT FOUR MONTHS FROM A VHA REHABILITATION CENTER. ALL SUBJECTS AND/OR THEIR CAREGIVER WERE INFORMED REGARDING THEIR RIGHTS OF PARTICIPATION. THE VOLUNTEER GROUP FOR THE GERI SCHAIR SUPPORT SYSTEM TOTALLED 33 INDIVIDUALS, 94% WERE FROM A HOSPICE PROGRAM AND 6% FROM A REHABILITATION FACILITY.

SUBJECTS WERE SELECTED TO PARTICIPATE FOR A MINIMUM THIRTY DAY EVALUATION UNLESS A REQUEST FOR TERMINATION WAS VOICED OR A CHANGE IN THEIR CONDITION RESULTED IN DISCHARGE OR DEATH.

RESULTS

THE SUBJECTS WHO PARTICIPATED IN THE GERI SCHAIR SUPPORT SYSTEM EVALUATION RANGED IN AGE FROM 63 TO 97 YEARS WITH AN AVERAGE AGE OF 82. THE GROUP WAS COMPRISED OF 8 MALES AND 26 FEMALES WITH AN AVERAGE HEIGHT OF 6’5” (HEIGHT RANGE 59-75”) AND AN AVERAGE WEIGHT OF 346LB (WEIGHT RANGE 90-246LB). ALL 33 PARTICIPANTS EXHIBITED IMPAIRED MOBILITY AND/OR ACTIVITY, 32 SUBJECTS WERE BED-BOUND, 1 WAS AMBULATORY WITH ASSISTANCE. ALL PARTICIPANTS HAD CO-MORBIDITIES THAT EFFECTED THEIR OVERALL HEALTH STATUS, 19 SUBJECTS HAD ONE TO THREE CO-MORBIDITIES WHILE 13 SUBJECTS HAD MORE THAN THREE CONDITIONS SUCH AS CARDIOVASCULAR DISEASE, STROKE, CHRONIC OBSTRUCTIVE PULMONARY DISEASE, MALIGNANT CARCINOMA, ARTHRITIS, PERIPHERAL VASCULAR DISEASE, PRESSURE ULCERS, SEVERE CONTRACTURES, INCONTINENCE, MALNUTRITION AND IMPAIRED HYDRATION.

THE AVERAGE PERIOD FOR GERI SCHAIR SUPPORT SYSTEM OBSERVATION WAS 39 DAYS (RANGE DAY 13-66 DAYS). 27 SUBJECTS WERE FOLLOWED FOR MORE THAN 30 DAYS, THE REMAINING 6 INDIVIDUALS WERE DISCHARGED OR EXPIRED BUT PROVIDED RELEVANT CONTRIBUTING DATA.

THE 33 PARTICIPANTS 100% RATED THE GENERAL COMFORT AS IMPROVED COMPARED TO THEIR PREVIOUS SURFACE, 17 OF THE PARTICIPANTS EXPRESSED PAIN RELATED TO SITTING AT THE ONSET OF THE EVALUATION AND 100% OF THEIR CAREGIVERS REPORTED OR RESOLUTION IN THEIR PAIN STATUS WHICH THEY ASSOCIATED WITH THE SUPPORT SURFACE INTRODUCTION.

ADDITIONAL FEEDBACK RELATIVE TO COMFORT WAS EXPRESSED AS POSITIVE BEHAVIORAL CHANGES EVIDENT ON MULTIPLE INDIVIDUALS WHO HAD PREVIOUSLY ATTEMPTED TO GET OUT OF THE CHAIR OR CONTINUALLY CALLED OUT TO BE RETURNED TO BED BECAUSE OF COMFORT AND CONTENT WITH IMPLEMENTATION OF THE GERI SCHAIR SUPPORT SYSTEM.

PREVIOUS SUPPORT SURFACES THAT WERE REPLACED BY THE EVALUATION SURFACE INCLUDED; 50% GEL/FOAM SEAT CUSHION, 12% GENERIC FOAM SUPPORT SURFACE ALONE.

CONCLUSIONS

QUALITY OF LIFE WAS IMPROVED ON ALL SUBJECTS WHEN SITTING DIRECTLY RELATED TO IMPROVEMENTS IN THE GERI SCHAIR SURFACE.

POSTURAL ALIGNMENT NOT ONLY PROVIDED COMFORT AND SAFETY BUT WAS INTERPRETED BY SIGNIFICANT OTHERS AS IMPROVED APPEARANCE IN REGARDS TO SELF DIGNITY.

BEHAVIORAL ISSUES SUCH AS CALLING OUT, REFUSAL TO REMAIN IN CHAIR AND RESTLESSNESS WERE RESOLVED BY THE IMPLEMENTATION OF THE HIGH-SPECIFICATION FOAM SUPPORT.

WOUND HEALING PROGRESS WAS NOTED IN STAGE I AND II PRESSURE ULCERS THROUGH CARE PLAN REVIEWS OF THE GERI SCHAIR SUPPORT SURFACE ALONE.

IMPLEMENTATION OF ECONOMICALLY DESIGNED HIGH-SPECIFICATION FOAM SUPPORT SURFACES CAN IMPROVE SAFETY, COMFORT AND TISSUE INTEGRITY OVER STANDARD GEL/FOAM SUPPORTS.

SMALL SAMPLE SIZE, HISTORICAL REPORTING AND CONVENIENCE SAMPLING ARE LIMITATIONS OF THIS STUDY. RANDOM CONTROL STUDIES ARE NEEDED TO VALIDATE THE FINDINGS OF THIS STUDY.

ACKNOWLEDGMENT:

EVALUATION PRODUCT PROVIDED COURTESY OF THE INDOCARE COMPANY, LLC.

REFERENCES:

How Posture Affects Health

Unhealthy Posture

- Skeletal Deviations
- Rotated pelvis
- Spinal compression/twist
- Muscle & tendon strain
- Nerve & tissue compression
- Pain, injury, deformity

Balanced Posture

- Normal spinal alignment
- Neutral pelvic orientation
- Pelvic angle >90°
- Head & neck erect
- Arm & foot supported
- No popliteal compression
- Back & thigh supported

Unhealthy sitting posture (X) vs. Correct sitting posture (√)

Glaser A. The Vital Role of Seating in Back Care. Back Pain; Mar 2000

Ergonomic Factors

1. Gravity induces fatigue with prolonged sitting
   a. Upper body slump
   b. Head droop
   c. Vertebral compression
d. Musculo-skeletal strain

2. 20 minutes in any static position requires 40 minutes for muscle recovery

3. Postural imbalances induce pain & defects over time, likewise postural issues resolve over time when corrective measures are implemented

4. Seating imbalances can cause permanent changes in the musculo-skeletal system. If corrections are not implemented as early interventions

5. Seat width & height must be proportionate to stature

Health Benefits

- Unrestricted breathing
- Optimal chest expansion
- Enhanced diaphragm function
- Oral airway optimized
- Less abdominal compression
- Optimized digestion
- Unrestricted esophagus
- Optimized swallowing
- Unrestricted popliteal flow
- Less LE pain & swelling
- Pressure distribution

Acknowledgment: Evaluation product provided courtesy of the iHeal Company, LLC. - Co-investigators: Angelene Moore, OT/L, LMT, LIH; Hospice of Dayton and Tracey Woodward, CRT. THERAPY SUPPORT

Presented at 2013 SAWC Symposium - Susan Girolami, RN, BSN, WOCN, THERAPY SUPPORT, CINCINNATI, OH - susan.girolami@therapysupport.com
1. Select chair style based on mobility, strength, joint flexibility and muscle tone
2. Select chair width based on hip width (+) 2 inches and chair depth based on coccyx to popliteal length (-) 1-2 inches

3. Adjust seat height, footrest length, and armrest height to patient stature
4. Select a therapeutic support surface that supports posture and reduces static forces
5. Determine individual repositioning schedule and sitting duration limitations

Unhealthy Posture

Geri chair issues; sliding down resolved with ergonomically designed high-specification foam support.

- Improved comfort
- Reduced fall risk r/t sliding
- Chest & abdomen expansion
- Heel off-loading
- Pelvic off-loading
- Arm support
- Eye gaze level with environment
- Improved socialization

High back wheelchair issues; slumped posture with internal trochanteric rotation, rounded shoulders, spinal distortion, sacral sitting. Ergonomic high-specification foam support with lumbar support and solid extended depth based achieve balanced posture.

- Chest & abdominal expansion
- Neutral pelvic position
- Thigh & lumbar support
- Foot & arm support
- Head & neck alignment
- Improved comfort
- Pressure redistribution
- Leaning resolved
- Restless behavior resolved

Balanced Posture

Complaint of exacerbation in chronic back pain and intolerance to sitting; resolved with high-specification foam support with solid based seat, lumbar support and conforming head rest.

- Conforming back rest
- Spinal alignment
- Neutral pelvic orientation
- Improved thigh support
- Arm & foot support
- Chest & abdomen expansion
- Improved head & neck alignment
- Pressure redistribution
- Improved comfort
- No sliding/ migration
- Improved sense of well-being

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