Sprayed Intraperitoneal Local Anesthetic for Laparoscopic Appendectomy in Children

Randomized Controlled Trial

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ABSTRACT

Objective:
Background:
Methods:
Results:
Conclusions:
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Keywords: appendectomy, appendicitis, children, intra-peritoneal, laparoscopic, local anesthetic, randomized controlled trial

INTRODUCTION

Appendicectomy for acute appendicitis is the most common emergency abdominal operation performed for children. At Starship Hospital, the operation is routinely performed laparoscopically because this approach is less painful; however, post-operative pain can still be severe.[1,2] Data from two recent randomized controlled trials from our unit reveal 70-80% of children receive opiate analgesia after laparoscopic appendicectomy. The first trial demonstrated no benefit from warm humid gas versus room temperature dry gas for distending the abdomen during laparoscopic appendicectomy.[3] Our second trial (recently completed and as yet unpublished) demonstrated significantly reduced pain in the first 6 hours with an ultrasound guided rectus sheath nerve block (that is, reducing the pain at the umbilicus where the largest incision is made). However, pain was still quite severe after the nerve block had worn off.

A systematic review of the literature uncovered only three peritoneal local anaesthetic trials in paediatric laparoscopic surgery involving a total of 125 children.[4–6] Only one was a randomized prospective study, involving 30 children undergoing a variety of elective laparoscopic procedures.[4] This trial demonstrated significantly lower pain scores in the peritoneal local anaesthetic group; however, several methodological aspects of the study including its small size, no report of the randomization method, no blinding and no placebo group suggest further evidence is needed before peritoneal local anaesthetic can be considered efficacious in paediatric surgery.[4]

In adults, the benefits of peritoneal local anaesthetic have been well documented.[7–10] Evidence for peritoneal local anaesthetic in acute appendicitis, however, is lacking. We hypothesise that a significant proportion of post-operative pain may be mediated by afferent nerve fibres in the parietal peritoneum. Furthermore, the vagus nerve may contribute to a poorly localised 'visceral' pain.[11] Vagal afferent nerve endings are located in the visceral peritoneum. Peritoneal inflammation from the inflamed appendix and from the surgical dissection may cause considerable pain through these two neural pathways.

Our hypothesis is peritoneal local anaesthetic spray will reduce pain in children after acute laparoscopic appendicectomy. The specific objectives of the trial are to: 1. Reduce pain in children after laparoscopic appendicectomy; 2. Reduce opiate requirements; 3. Reduce length of hospital stay.

METHODS

Study Design

The Sprayed Peritoneal Regional Analgesia in Appendectomy trial was a single-center randomized placebo controlled parallel-group trial with a 1:1 allocation ratio. A protocol prospectively specified trial methods and appears at ANZCTR.org.au (registration reference ACTRN12613001159741). The Southern Health and Disability Ethics Committee (reference 13/STH/166) and Auckland District Health Board Research Review Committee (reference A+6073) approved the study.

Study Setting

The study was set in Starship Children's Hospital, a tertiary referral center in Auckland, New Zealand, providing emergency surgical services to a local population ≈1.4 million. Children present to an Emergency Department and following surgery receive care on surgical or medical pediatric wards.

Study Participants

Enrolment occurred in the Emergency Department or wards after determining the need for emergency appendectomy. Surgical registrars or surgeons invited participation in the trial if children were aged 8 years or older. Exclusion criteria were developmental delay, neuro-muscular impairment, chronic pain, psychiatric illness, unable to speak and read English, partially sighted or blind (because pain scoring required a visual pain scale), the presence of a abdominal prostheses such as a gastrostomy or ventriculo-peritoneal shunt, allergy to bupivacaine, and body weight less than 20 kg. Participating children and a parent or legal guardian gave informed consent.

Interventions

The diagnostic work-up was at the discretion of surgical admitting team. Pre-operative preparation complied with institutional procedures for resuscitation, analgesia, and pre-operative antibiotics.

At surgery, the intervention involved spraying 20 mL of study solution (either local anesthetic or saline) onto the visceral and parietal peritoneum of the right iliac fossa and pelvis. The surgeon usually sprayed the peritoneum before dissecting out the appendix, except in the presence of pus or contamination when spraying was delayed until after peritoneal lavage. Surgeons used a 5mm CoSeal DuploSpray MIS Applicator® (Micromedics, St. Paul, MN) to spray in most cases, or alternatively an 8 Fr feeding tube (Fig. 1).

Standardized surgery involved a three port technique with a 10 mm (occasionally 5 mm) umbilical Hasson cannula and 5 mm (occasionally 3 mm) left iliac fossa and suprapubic ports.

Standardized analgesia included a rectus sheath nerve block with 10ml 0.25% bupivacaine with epinephrine 1:400,000, and the port site infiltration with 6ml 0.25% bupivacaine with epinephrine, 2ml at each port site, infiltrated subcutaneous at the umbilical port and into the abdominal muscles under laparoscopic guidance for left iliac fossa and suprapubic ports.

Standardized anesthesia involved intraoperative morphine up to 0.3 mg/kg, fentanyl 2 mcg/kg titrated as required, paracetamol 15 mg/kg, parecoxib 1 mg/kg up to a maximum of 40 mg, if not contraindicated. Standardised prophylactic antiemetic was ondansetron 0.15 mg/kg and dexamethasone, if not contraindicated.

Standardized post-operative pain management involved: regular oral paracetamol 20 mg/kg 6 hourly for 24 hours, substituted with intravenous paracetamol 15mg/kg 6 hourly for 24 hours if not able to tolerate oral intake; oral tramadol as needed; intravenous morphine as needed as per institutional protocol. Patients who required more than 5 titrations of morphine within a 25 minute period were eligible for a patient controlled analgesia pump device (PCA) with morphine or fentanyl, at the discretion of the Acute Pain Service.

Study Outcomes

A blinded investigator (JKH) and research nurse collected a standardized data-set throughout the study.

Primary Study Outcomes

The primary outcomes were the post-operative requirements for opiate analgesia and pain scores.

Opiates doses were converted to morphine equivalents and summed for post-operative periods 0–6, 6–12, and 12–24 hours.

Nurses gathered Faces Pain Scale–Revised (FPS–R) pain scores on a previously validated chart for recording pain severity overall and at specific locations on the abdomen,[12] specifically we documented suprapubic and the right iliac fossa scores because they corresponded to sprayed areas. Children reported their pain on waking in the Post-Anesthetic Care Unit (PACU) and at 2, 4, 6, 8, 12, 16, 20, and 24 hours post-operatively, and we noted maximal scores for 0–3, 3–6, 6–12, and 12–24 hour periods.

Secondary Study Outcomes

Secondary outcomes were the number of children who received opiate and anti-emetic, time to first opiate and anti-emetic, the number of children asleep at any time period, the length time spent in PACU and in hospital, a revised quality of life recovery score at 10 days after operation, global satisfaction post-operatively, complications, and readmission within 30 days of hospital discharge.

The revised quality of life recovery score has been previously described by us.[3] Briefly, it is a 10-item questionnaire developed from the Pediatric Quality of Life Inventory version 4.0.[13] Participants returned the questionnaire by post or at a telephone interview by a blinded investigator (JKH) or research nurse.

To record postoperative complications or readmissions we prospectively followed patients in hospital and phoned families at 6 weeks after surgery. Complications were graded in severity by the Clavien–Dindo classification.[14,15]

Sample Size

Power calculation was performed a priori using pain score data from a recent randomized controlled trial from our unit. To reduce mean global pain scores by 30% from 4.39 to 3.07, standard deviation (SD) 2.65, variance equal, α error probability 0.05, $1 - \beta$ error probability 0.90, t test calculated a sample size of 87 in each group.

Randomization

The allocation sequence was generated by an open source computer-based on-line random number generator, http://www.random.org. All numbers from 1 to 209 (to give 20% redundancy) were generated in random sequence. Randomization was not restricted or stratified.

Allocations were placed in sealed opaque sequentially numbered envelopes, and stored in the operating suite.

A research assistant generated the random number sequence, assigned a random number columns to each of the two groups, and prepared the sequentially numbered allocation envelopes. Surgical registrars and surgeons enrolled participants. Theatre nurses assigned participants to interventions according to allocation. Before the patient or surgeon entered the operating room, an unblinded circulating nurse would open the next envelope in the sequence, and with the assistance of the unblinded scrub nurse (for double checking) prepare the study solution, either 0.25% bupivacaine with adrenaline or 0.9% sodium chloride, taking care to do this out of view of other theatre personnel. The volume of study solution ensured the total local anesthetic dose remained below 2.5 mg/kg body weight.

Blinding

Children, families, investigators, surgeons, anesthetists, theatre personnel (except the unblinded circulating nurse and scrub nurse), ward nursing staff, and pain team members responsible for the care of participants remained blinded to allocation. Blinded investigators collected

data. The principle investigator performed statistical analysis blinded to group allocations and prepared results tables labelled by coded study group. The allocations was subsequently be revealed at the completion of data analysis.

The interventions were similar, leading to little risk of being able to break blinding through observation intra-operatively or post-operatively. The write-up of the report of the study commenced prior to revealing group allocations.

Statistical Methods

We express central tendency and variability as mean and SD or median and interquartile ranges (IQR), and compared groups using unequal variance t tests or Wilcoxon rank sum tests, for normal or non-parametric data respectively, and compared proportions with Fisher's exact test.

We performed linear mixed-effects analysis of the relationships between peritoneal spray and pain scores, with the intervention (local anesthetic or saline spray) as a fixed effect and subject-specific random intercepts. We investigated the effect of whether the appendicitis was perforated or not by adding it as a fixed effect to the model. We felt model assumptions were satisfied because residual plots did not deviate from homoscedasticity. We did use likelihood ratio tests of the the full model against the model without the intervention to obtain P values. All tests were 2-sided. We used the statistical program, R, for analysis[16] with the package lme4 for the linear mixed-effects model[17] and G*Power version 3.1.3[18] for the power calculation.

RESULTS

Participants

The trial recruited participants between May 21, 2014 and March 9, 2015, completing follow-up on April 20, 2015. Of 201 children aged 8–14 assessed for eligibility, the trial excluded 17 before randomization and 9 after randomization leaving 175 participants (87.1% of all assessed), 87 in group A and 88 in group B (Fig. 2).

The two groups possessed similar baseline characteristics except for a non-significant trend to higher C-reactive protein (CRP) levels and perforated appendicitis rates in group B (Tables 1 & 2).

Numbers Analyzed

All analyses were intension-to-treat by originally assigned groups. Data on medications and length of stay were available for all 175 participants. Two participants in group A and one in group B contributed no pain score data for any time period. A total of postoperative recovery questionnaires were performed: ... from participants in the intervention group and ... from participants in the control group. Participants were followed up 6 weeks post discharge via a telephone call, and data collection was completed up to this point for ... participants.

Primary Outcomes

Secondary Outcomes

Length of Hospital Stay

Complications

Exploratory Analyses

DISCUSSION

CONCLUSIONS

ACKNOWLEDGEMENTS

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Figures

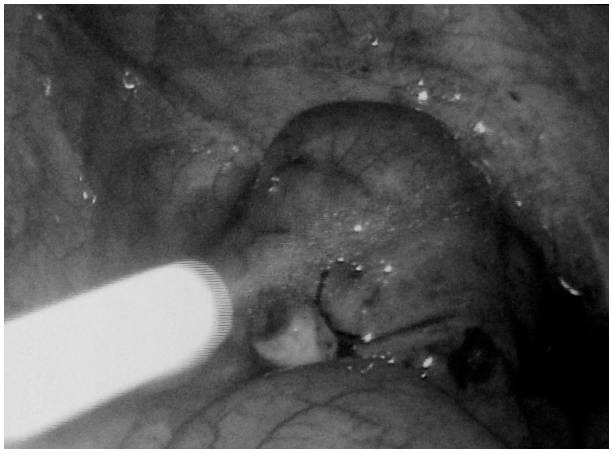

Figure 1: Intraoperative photo of study solution sprayed into the right iliac fossa after appendectomy

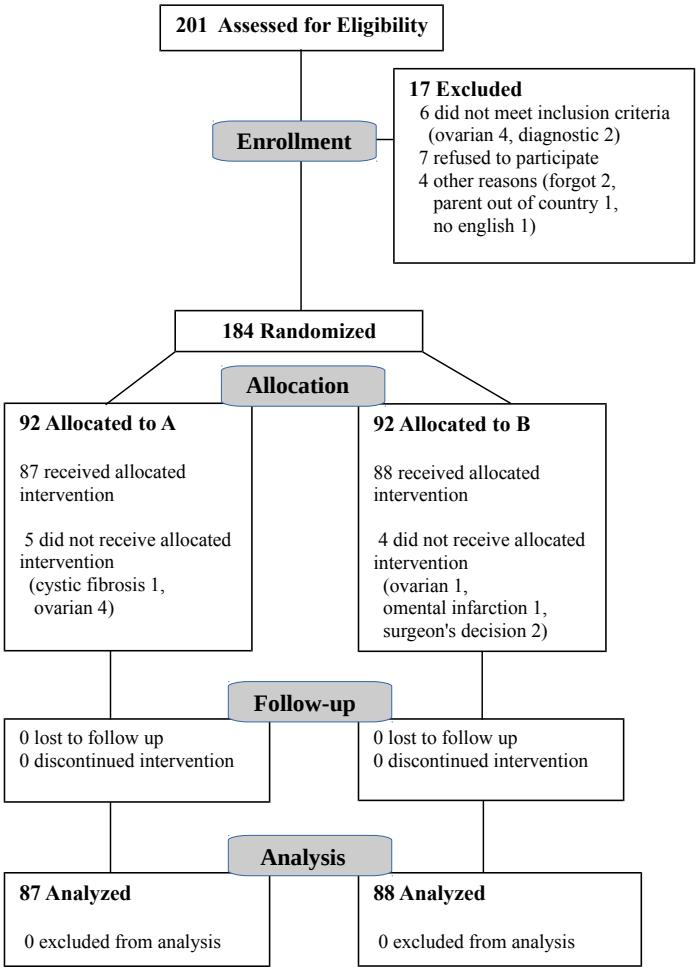

Figure 2: CONSORT flow diagram of the phases of the parallel randomized trial

Tables

Table 1: Baseline characteristics of the two groups: categorical

	N A	% A	N B	% B	P
Female	39.00	44.80	34.00	38.60	0.44
European	48.00	55.20	48.00	54.50	1.00
Maori	18.00	20.70	14.00	15.90	0.44
Opiate preop	35.00	40.20	43.00	48.90	0.29
ASA 1	72.00	82.80	82.00	93.20	0.46
Consultant	25.00	28.70	17.00	19.30	0.16
Sprayed at end	83.00	95.40	85.00	96.60	0.72
Pus present	28.00	32.20	36.00	40.90	0.27
Washed	42.00	48.30	53.00	60.20	0.13
Perf @ op.	15.00	17.20	24.00	27.30	0.15
Perf on histo	11.00	12.60	21.00	23.90	0.08

Table 2: Baseline characteristics of the two groups: continuous

	GroupA			*GroupB*			*Normality*		*Sig.*
	Median	Mean	SD	Median	Mean	SD	A	B	*P*
Age	12.40	12.10	1.85	11.66	12.10	1.97	0.00	0.00	0.15
Wt	46.15	50.76	18.36	43.15	50.76	15.26	0.00	0.00	0.16
DurPrSm	24.00	39.82	34.19	24.00	39.82	25.00	0.00	0.00	0.55
Temp	36.90	36.91	0.67	36.90	36.91	0.66	0.00	0.03	0.32
HR	93.00	94.33	18.16	100.00	94.33	19.47	0.32	0.35	0.08
WBC	13.88	14.00	5.41	14.20	14.00	4.64	0.07	0.47	0.34
Neutro	10.01	10.70	5.28	10.98	10.70	4.61	0.04	0.08	0.31
ImmGra	0.04	0.05	0.03	0.05	0.05	0.03	0.00	0.01	0.05
CRP	15.00	39.41	55.95	31.00	39.41	60.89	0.00	0.00	0.08
Ormin	73.00	77.69	27.95	79.00	77.69	34.21	0.00	0.00	0.19
Clonidine	0.00	2.47	12.36	0.00	2.47	5.73	0.00	0.00	0.39
Dex	4.00	3.83	2.32	4.00	3.83	5.28	0.00	0.00	0.90
Fent	80.00	75.11	53.68	60.00	75.11	35.08	0.00	0.00	0.20
Morph	5.00	5.45	3.05	5.00	5.45	2.13	0.00	0.00	0.42
Ondan	4.00	2.69	2.31	4.00	2.69	1.91	0.00	0.00	0.23
Paracox	30.00	23.17	18.35	40.00	23.17	17.24	0.00	0.00	0.18
MEDDor	13.00	12.96	5.96	11.00	12.96	4.18	0.00	0.01	0.11
TenDayPre	100.00	98.68	3.14	100.00	98.68	5.41	0.00	0.00	0.70

Table 3: Outcome categorical data

	N A	% A	N B	% B	P
Opiate received	69.00	79.31	68.00	77.27	0.85
Antiemetic received	29.00	33.33	39.00	44.32	0.16
Asleep 0-3 h	11.00	12.64	6.00	6.82	0.40
Asleep 3-6 h	11.00	12.64	15.00	17.05	0.52
Asleep 6-12 h	4.00	4.60	14.00	15.91	0.11
Asleep 12-18 h	5.00	5.75	3.00	3.41	0.38
Asleep 18-24h	2.00	2.30	0.00	0.00	0.29

Table 4: Outcome continuous data

	GroupA			*GroupB*			*Normality*		*Sig.*
	Median	Mean	SD	Median	Mean	SD	A	B	*P*
PACUmin	25.00	30.69	14.77	30.00	30.69	13.90	0.00	0.01	0.62
TmOpiateMin	268.50	332.90	317.63	96.50	332.90	356.27	0.00	0.00	0.26
ME0to6	0.00	1.94	3.10	1.00	1.94	3.30	0.00	0.00	0.56
ME6to12	0.00	1.82	2.66	0.00	1.82	2.44	0.00	0.00	0.49
ME12to24	0.00	3.64	7.79	1.60	3.64	5.31	0.00	0.00	0.96
ME0to24	4.50	7.40	9.73	4.20	7.40	8.27	0.00	0.00	0.47
ME0to6Kg	0.00	0.04	0.06	0.02	0.04	0.06	0.00	0.00	0.56
ME6to12Kg	0.00	0.04	0.05	0.00	0.04	0.04	0.00	0.00	0.72
ME12to24Kg	0.00	0.07	0.12	0.04	0.07	0.08	0.00	0.00	0.95
ME0to24Kg	0.08	0.14	0.15	0.08	0.14	0.13	0.00	0.00	0.60
TmEmeticMin	511.00	498.66	404.28	304.00	498.66	417.07	0.04	0.00	0.38
GlobA	3.00	3.39	3.12	2.00	3.39	2.88	0.00	0.00	0.42
UmbA	0.25	2.51	3.11	0.00	2.51	2.73	0.00	0.00	0.33
EpiA	0.00	0.73	1.97	0.00	0.73	1.93	0.00	0.00	0.57
LUQA	0.00	0.20	0.89	0.00	0.20	1.85	0.00	0.00	0.01
LIFA	0.00	0.86	1.88	0.00	0.86	2.10	0.00	0.00	0.46
SPA	0.00	1.07	2.05	0.00	1.07	2.06	0.00	0.00	0.61
RIFA	0.00	1.49	2.46	0.00	1.49	2.46	0.00	0.00	0.87
RUQA	0.00	0.45	1.50	0.00	0.45	2.15	0.00	0.00	0.05
STA	0.00	0.41	1.35	0.00	0.41	1.75	0.00	0.00	0.47
GlobMovA	4.00	4.02	3.43	3.00	4.02	3.33	0.00	0.00	0.29
UmbMovA	1.40	2.90	3.45	0.00	2.90	3.26	0.00	0.00	0.47
EmpMovA	0.00	0.86	2.10	0.00	0.86	2.32	0.00	0.00	0.87
LUQMovA	0.00	0.33	1.02	0.00	0.33	2.15	0.00	0.00	0.29
LIFMovA	0.00	1.00	2.16	0.00	1.00	2.73	0.00	0.00	0.55
SpMovA	0.00	1.30	2.36	0.00	1.30	2.52	0.00	0.00	0.34
RIFMovA	0.00	1.71	2.76	0.00	1.71	2.88	0.00	0.00	0.66
RUQMovA	0.00	0.57	1.71	0.00	0.57	2.60	0.00	0.00	0.22
STMovA	0.00	0.45	1.63	0.00	0.45	1.86	0.00	0.00	0.59
GlobB	4.00	3.72	2.85	3.00	3.72	2.99	0.00	0.00	0.22
UmbB	2.00	2.60	2.81	0.00	2.60	3.01	0.00	0.00	0.37
EpiB	0.00	0.71	1.89	0.00	0.71	1.90	0.00	0.00	0.59
LUQB	0.00	0.56	1.61	0.00	0.56	1.72	0.00	0.00	0.76
LIFB	0.00	1.22	2.22	0.00	1.22	2.32	0.00	0.00	0.53
SPB	0.00	1.76	2.58	0.00	1.76	2.39	0.00	0.00	0.17
RIFB	0.00	1.47	2.45	0.00	1.47	2.85	0.00	0.00	0.56
RUQB	0.00	0.85	2.08	0.00	0.85	2.04	0.00	0.00	0.56
STB	0.00	0.55	1.72	0.00	0.55	1.98	0.00	0.00	0.53
GlobMovB	5.00	4.74	3.16	4.50	4.74	3.21	0.00	0.00	0.15
UmbMovB	3.00	3.43	3.45	2.00	3.43	3.30	0.00	0.00	0.70
EpiMovB	0.00	0.93	2.25	0.00	0.93	2.18	0.00	0.00	0.62
LUQMovB	0.00	0.75	2.06	0.00	0.75	1.96	0.00	0.00	0.81
LIFMovB	0.00	1.59	2.69	0.00	1.59	2.68	0.00	0.00	0.60
SpMovB	0.00	2.30	2.99	0.00	2.30	2.87	0.00	0.00	0.22

Continued on next page

Table 4 – continued from previous page

	GroupA			*GroupB*			*Normality*		*Sig.*
	Median	Mean	SD	Median	Mean	SD	A	B	*P*
RIFMovB	0.00	1.98	2.85	0.00	1.98	2.93	0.00	0.00	0.90
RUQMovB	0.00	1.05	2.40	0.00	1.05	2.29	0.00	0.00	0.72
STMovB	0.00	0.77	2.03	0.00	0.77	2.03	0.00	0.00	0.98
GlobC	4.00	3.75	2.53	4.00	3.75	2.69	0.00	0.00	0.69
UmbC	2.00	2.60	2.49	1.00	2.60	2.65	0.00	0.00	0.24
EpiC	0.00	0.73	1.76	0.00	0.73	1.61	0.00	0.00	0.74
LUQC	0.00	0.47	1.37	0.00	0.47	1.25	0.00	0.00	0.91
LIFC	0.00	1.14	2.10	0.00	1.14	2.19	0.00	0.00	0.58
SPC	0.00	1.70	2.49	0.00	1.70	2.20	0.00	0.00	0.21
RIFC	0.00	1.67	2.55	0.00	1.67	2.56	0.00	0.00	0.78
RUQC	0.00	0.64	1.60	0.00	0.64	2.00	0.00	0.00	0.58
STC	0.00	1.12	2.18	0.00	1.12	1.95	0.00	0.00	0.95
GlobMovC	6.00	5.21	2.87	5.00	5.21	2.92	0.00	0.00	0.32
UmbMovC	4.00	4.05	3.42	3.00	4.05	3.05	0.00	0.00	0.25
EmpMovC	0.00	1.04	2.40	0.00	1.04	1.74	0.00	0.00	0.75
LUQMovC	0.00	0.68	1.94	0.00	0.68	1.57	0.00	0.00	0.50
LIFMovC	0.00	1.85	3.05	0.00	1.85	2.32	0.00	0.00	0.28
SpMovC	0.00	2.50	3.36	0.00	2.50	2.25	0.00	0.00	0.08
RIFMovC	0.00	2.49	3.22	0.00	2.49	3.09	0.00	0.00	0.95
RUQMovC	0.00	1.10	2.40	0.00	1.10	2.37	0.00	0.00	0.49
STMovC	0.00	1.42	2.55	0.00	1.42	2.54	0.00	0.00	0.96
GlobD	4.00	4.00	2.57	4.00	4.00	2.80	0.00	0.00	0.27
UmbD	3.00	2.78	2.59	2.00	2.78	2.90	0.00	0.00	0.41
EpiD	0.00	0.65	1.51	0.00	0.65	1.73	0.00	0.00	0.50
LUQD	0.00	0.22	1.08	0.00	0.22	1.61	0.00	0.00	0.48
LIFD	0.00	1.28	1.99	0.00	1.28	2.62	0.00	0.00	0.47
SPD	0.00	1.69	2.38	0.00	1.69	2.57	0.00	0.00	0.24
RIFD	0.00	1.39	2.11	0.00	1.39	2.51	0.00	0.00	0.79
RUQD	0.00	0.38	1.17	0.00	0.38	1.82	0.00	0.00	0.31
STD	0.00	0.75	1.72	0.00	0.75	1.45	0.00	0.00	0.90
GlobMovD	6.00	5.61	2.61	5.00	5.61	2.95	0.01	0.00	0.06
UmbMovD	4.00	4.09	3.13	3.00	4.09	3.21	0.00	0.00	0.21
EpiMovD	0.00	0.75	1.75	0.00	0.75	2.10	0.00	0.00	0.46
LUQMovD	0.00	0.31	1.15	0.00	0.31	2.04	0.00	0.00	0.59
LIFMovD	0.00	1.96	2.86	0.00	1.96	2.64	0.00	0.00	0.32
SpMovD	0.00	2.40	3.02	0.00	2.40	2.74	0.00	0.00	0.30
RIFMovD	0.00	2.26	2.85	0.00	2.26	2.93	0.00	0.00	0.80
RUQMovD	0.00	0.83	1.90	0.00	0.83	2.37	0.00	0.00	0.23
STMovD	0.00	0.83	1.92	0.00	0.83	2.37	0.00	0.00	0.75
GlobE	4.00	3.81	2.72	4.00	3.81	2.60	0.01	0.04	0.97
UmbE	2.00	2.34	2.53	2.00	2.34	2.57	0.00	0.00	0.18
EpiE	0.00	0.66	1.62	0.00	0.66	2.22	0.00	0.00	0.37
LUQE	0.00	0.85	1.70	0.00	0.85	1.23	0.00	0.00	0.08
LIFE	0.00	1.76	2.22	0.00	1.76	2.44	0.00	0.00	0.44
SPE	0.00	1.85	2.38	0.00	1.85	2.63	0.00	0.00	0.52

Continued on next page

Table 4 – continued from previous page

	GroupA			*GroupB*			*Normality*		*Sig.*
	Median	Mean	SD	Median	Mean	SD	A	B	*P*
RIFE	0.00	2.16	2.80	1.00	2.16	2.54	0.00	0.00	0.93
RUQE	0.00	0.61	1.72	0.00	0.61	2.18	0.00	0.00	0.07
STE	0.00	0.56	1.70	0.00	0.56	2.16	0.00	0.00	0.75
GlobMovE	6.00	5.62	2.80	6.00	5.62	2.80	0.00	0.05	0.26
UmbMovE	5.00	3.88	3.12	4.00	3.88	2.98	0.00	0.00	0.91
EmpMovE	0.00	1.00	2.01	0.00	1.00	2.85	0.00	0.00	0.50
LUQMovE	0.00	1.22	2.14	0.00	1.22	1.87	0.00	0.00	0.12
LIFMovE	1.00	2.73	3.12	0.00	2.73	2.96	0.00	0.00	0.35
SpMovE	0.00	2.54	3.09	0.00	2.54	3.10	0.00	0.00	0.45
RIFMovE	3.00	3.10	3.21	3.00	3.10	3.11	0.00	0.00	0.97
RUQMovE	0.00	0.80	2.14	0.00	0.80	2.61	0.00	0.00	0.13
STMovE	0.00	1.35	2.71	0.00	1.35	2.97	0.00	0.00	0.67
TenDayPost	85.00	82.07	16.61	85.00	82.07	14.43	0.00	0.00	0.33
Satis	90.00	88.14	17.71	100.00	88.14	12.44	0.00	0.00	0.24
LOSdays	2.05	3.79	7.37	2.54	3.79	3.74	0.00	0.00	0.39
LOSpostopays	1.02	2.07	2.44	1.55	2.07	2.11	0.00	0.00	0.08
SkoolTm	9.75	12.81	11.14	8.99	12.81	12.92	0.00	0.00	0.70
SportTm	14.97	17.93	10.06	17.60	17.93	14.15	0.00	0.00	0.40
NormTm	11.89	14.63	9.62	11.95	14.63	12.03	0.00	0.00	0.75