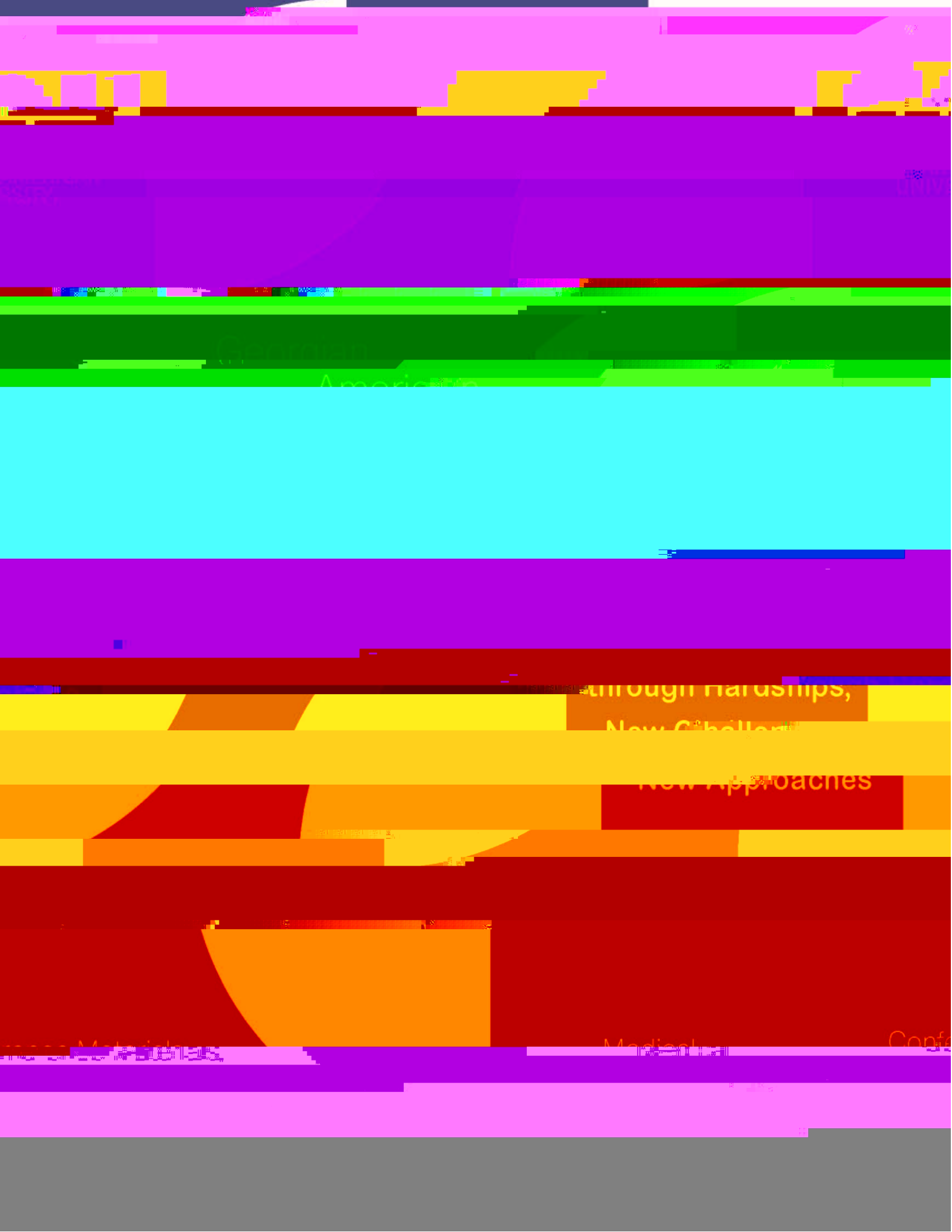
Through Hardships,
New Approaches

The First International Studentôs Conference

ñBioscience Through Hardships, New Challenges, New Approachesò

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Potential Role of Synesthesia in Combatting Neurodegenerative Diseases ХХХХХХХХХХХХХХХХХХХХХ

Psychological impact of covid19 pandemic on medical student ХХХХХХХХХХХХХХХХХХХХХ

Dissecting Barriers to Accessing Health Care in Georgia: Perspectives of Young Cancer Patients and Their Careers ХХХХХХХХХХХХХХХХХХХХХ

Intrinsic aging of the skin. A critical assessment of the role of hormones ХХХХХХХХХХХХХХХХХХХХХ

Artificial Blood: The Future of Blood Transfusions? ХХХХХХХХХХХХХХХХХХХХХ

The Psychosocial Impact of Wounds and the Nile Tilapia ХХХХХХХХХХХХХХХХХХХХХ

Chiari network through the years (1563-2020) ï should we worry? A chronological review ХХХХХХХХХХХХХХХХХХХХХ

Side Effects of COVID Vaccine ХХХХХХХХХХХХХХХХХХХХХ

Prostate fusion biopsy results depending on prostate volume, PSA and PSA density analysis ХХХХХХХХХХХХХХХХХХХХХ

Potential Role of Synesthesia in Combatting Neurodegenerative Diseases

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Keywords VWURRS¶V WHUWWLFDDSKDSQWQLQD QERXUDO SODVWLFLV

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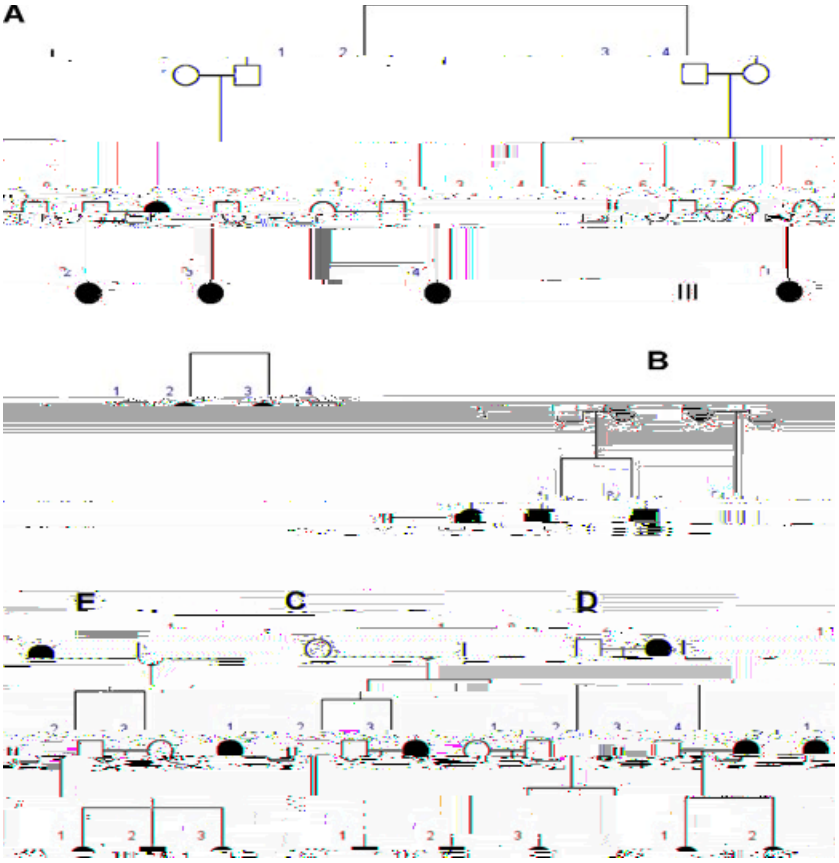

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Remember this in order as it would be asked in a later question to test memory, please be honest with your answer: eats, sitsy, bites, busts, drain

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‡ , ¶ Y H Q R W V H H Q [F H S W R E X W E L Y , H D E W K H Q X W , Z O O O R N D E G H W D E O H W
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‡ 1 R E X W , F D Q O L Q N D F R O R U W R W Z K R P R H S L H F, H W R K L Q X
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'RHV PHQWDO PSS SHRDUQVXZPKEHHQUHYDHUQXRRXEHWUKVL"Q N DERXW

x <HV HDFK QDXRGELHVUWLKQDFW ORFDWLRQ

x <HV EXW LW¶V DEXULHP DOLHNHDQGPGHRQWWYQ¶VWDSURMHHZF W RQ P

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QXPEHU LV JUHDWHU DV FRPSDUHG WR P\ SHHUV

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x , GRQ¶W UHODWH WR DQ\ RI WKH DERYH

+DYH \RX HYHU DVNDRFLHQGHGUSDRJQVSEHUVRQDOLWHWWH
‡ <HV LW KDV DZOZD\VWEHHQWKWKHRP KDYH GLVWLQF
SHUVRQDOLWLHV DQQGLQWXLRNYHUWHGOLVUDO \HDUDFG ER
‡ <HV QRW DOO QKXPYEHUSHFLDOWQGXWEVHEXWGRHKURO G
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WKH QXPEHUV RU DJH WR WKH OHWWHUV

‡ 1R , FDQ¶W EXHWDQKLQVWHUHPVWDQJN SKHQRPHQQ

‡ QR DVVRFLDWLQEJHUGHQHWLPWLSDUQWRRWQXFLHWQLFFLVP

)LUVW WLPH \RX PHHW VRPHRQH WKDWPRQSGHUWLRQ WKRZ
\RX XVXDOO\ UHFRJQL]HPWKHRDRYHDWKHGHYDQU RIVWRKFLRC
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x , XVXDOO\ UHPHPEHUWWKLHP HE\HFRQWRHDQRUHRVRUKR\ ZHUH
ZHDULQJ IRWLWPKH WLRUQVPWRIIDFKLDLQHYRSU HWDWXUHV

x ,¶P MXVW JRRG DW PEHXPRUR]LQWLQPDHEVHSVKGVRLPDWWHDUWX

x ,¶P QRW JRRGHUDLQJQDPHPEV ,HVHQHWPKERXFJHWKHLU

x , FDQ UHPHPEHU LQDPHV\RYHU\ KDUG

x , FDQ¶W UHPHPRPEHU PHW RQFH

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DSSDUHQW UHDVRQ

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x \HV EXW QRW HYHU\ SHUVRQ , PHHW
x 1R EXW , FDG KRZ WUXLWDPJKW ZRUN
x 1R WKDW LV VR DEVXUG

+DYH \RX HYHU RQVHFLDRWHG DVR ZHUP RU FROGHU
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VHHPHG FROGHU WR PH
x <HV KDSS\ PRRG VHPLOHRWKHUEDGRWHRQHVJDWHYHHGHZD
WR PH
x 1R , QHYHU DVVRFLWHSGEDWNGHEXWK,\WKLQRXJK LW
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x 1RW UHDOO\ , FDQ¶W UHODWH WR DQ\ RI LW
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P R U H D Q G R X U U H V R O W V W K D Q Z Q K D W K L Q S H Q W W L K H S R X W X E
F K R R V H V W R L P S U R Y H K H U Q H U V D H N L F D S D Q W X Z K R W L Z R R F K
L P S U R Y H K L V F R J Q L W L Y H V N L O O V L Q Q \ K R Z H O S H D L Q L R J D Q W L
Q H X U Q D O F R Q Q H F W L R Q K R Z Q G \ R X H W H D K W R F L D E H G L Z L \ W K U K L J K
F R J Q L W L R Q

H [W H Q V L Y H L R Y Q L V L X D L O P L D] J D H W W K H Z K K L H D H U K F W K K L W E E H H S W K H L Q G L Y L G X
X Q N Q R Z L Q J O \ P D N H W Z H E W Q R W F K E H W L R R X Q H G H D Q R Q Y L V X D O S H U F

: H F U H D W H G D Q L W K E O S L D H W L Y H Q W W J Z R W K O G R E E H H D [S R W X U R I W
H Q Y L U R Q P H Q W I R U I R Q V W R P Q H F W L W P R Q D $ K E R H Z U H Z R X Q G V W D U W
S U R F H G X U H E \ D V W R Q F J R W K H Y D K W L H Q H W D H U V H J L G H G E \ X W K W K D
F R P S O H W H O \ E O R F K L H G P I D \ R Y P W Y L L U V L X S Q W K H S D W H L W Q W H E U Q H H G
K L P K H U , Q D G L P O L W U R R P Z L W K K H L V H K H O V F D U H J Z H Y Z R X O
S D W L H Q W W R Y L X W K O] K H D E Q G Q G U R Z K G H R Q Z K Q W H Y H U S K U H N 7
F D U H W D N H U Z R X O F E H F W L P X O W K O H Q W K R W K G H Q Z L E U W \ D R I G D O V R
W K H S D W L H Q W Z L W S K U R F H V R O H F W Z R Q Z [Q H W V R Q Z L] Q H W R Q X D Q G R F F X U L
Z K L O H W K H S D W L H Q W Z K R Q V Z H D E K Q W K K E D G H H Q W U F X Q E H U E \ W K
S D W L H Q W $ J A I Q H W K H Q W L R X J R W P R S E L L O R G W L R I W K L V H [H U F
G R Q H \ V Q Q R G R I L Q F R Q Y H Q L H

: H Z R X O G F R P E L Q H W R K J H W H K W Z R D Y G K M Q G L X F F H H F K E Q \ P H W

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DFFRPSDQ\LQJ WR SDWLHQW :KLOHGEHLQLVHVKRVHVHGRBVRIWWK
WR PDLQWDLQ WHKSDDWLHQWVQBQVGRUHQHWWKKWKFHPJHQQWDLYHHGH[HUF
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,Q SURSSHFWLYHQVWXGLHV LVXHGYWXRUFRKGDVJKQHUDWKHLRQ RI WK
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2XU UHVXOWV VKRZHG WKDW GLIFWLQHQGHMPQWVDLHRGFWXUZLWKHQ
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:H KDYH UHVWULFWHGRXUDH$SSHUPHRQWXULHQVGRXFLQEROQGRI
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GHPHQWLD E\ GLIIHUHQWPHQWKRGGVDZQLGWQK VDFRSHWRRISUHVHD
3URSSHFWLYH UGHRVPHDLQFRRLXQO GWKLQWRWXGHU LNQGXFVWRLRVQ\QHVWK
UHGXFHG FDSLWDOR RYHUDYVPHSQWRGLHQGJWWHK H$YVQHVVQFHXWLF U
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References

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± KWWSV GRL RUJ MRFQ

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Psychological impact of covid19 pandemic on medical student

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Abstract- & R U R Q D Y L U X V S D Q G H P L F V W D U W H G O D Q R Y K H L Q W D K H Q G R V
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WDNH \HDUV WR GLVWULEXWH RYHUDOO WLQLHVW DPRQJ WKH SZUKRO HW
ZRUNHUV DQG ROG SHRSOHV IRU YDFFLQDWLRQ

7KH FRQWLQXRXV HSLGHPLFV WKHVH SURJUHVVHV GWGLHRQDPVHDQXUWDUW
DQG XQLYHUVLWLHV SHRWVHGWKHRZQOXHQFHOWKHRI PHGLF
7KHUH KDYH EHHQ\FKRORJLVWDRQLWKHPHFKDQLVPV **WKH PHGLFDO V**
SDWLHQWV **(Q. Chen et al., 2020; Yang**

FRQFHUQ RI IDPLO\ KHDOWK VWDWXV URRE VOWHXPGHRQVOLQHQGGX
WUDYHO WR KRPH

Statistical analysis ± 'DWD DQDO\VLV RLVOGP%QHV LEF HI[HWHEDWWSZHLYHH VWD
FRPSXWHG IRU DHSRYUDWUHGEDOHQXDPQXGHQFR\ HDQVGHSHUFHQWDJH
FDWHJRULFDO YDDQQGEVOWHDYQGQGUGP HEDHQGVLDQVLRQV HS SRUR SULDW
FRQWLQXRXV YDULGHESOHVV VSLYHQUDQHWDEROLHVWR\DWLRQV HS SRUR GLIIH
SDUDPHWHUV QZGWGKHSQ[LVHVWR LV GRQH E\ H[FHO

Hypothesis ï &RYLG SDQGHPLF LFDXVHSVUHSEVOHKRVCSHULHVHVDRQLHWWU
DPRQJ PHGLFDO VRVUXGHQWV W7UDHYQDEQOLQJOWFRULKVRLPH RQOLQH
FRYLG LQIHEWLRQ FLUHVDKRVJKLFDSV SUEOHP

Results ï :H DQDO\VHG WKDWWV ZHUHVISRQGHUR P DJH
\HDUV DQG VWXGKDQWV DHUPVRUSHQGZHUFRQVLGHVSRGHQWV
PDOH UHVSRQGHQWV ZRWKHIUHPRQWG ZHUHWXRGW SUHIHU
WKHLU JHQGHU SRQGWXGHQDWV WUDQ EHDWRJVDWLRW,QZGKLOH
EHORQJV WR RWKHUXFRXQWULHVSRQGHGWXGKDWQ WKRUJLDQ $
XQLYHUVLW\ LQGHQGV LQVWKHUVXWLGHQWWVWZHUVH IUP
\HDU QGUHDU UGUHDU WKUHDU WKUHDU

,Q FDVH RI VWUHVWKDWWHWSRQZHQWRWFRWLGHVHG GXGLGQ¶W
VWUHVV DQG WWXGHQDEVRXWUXHKHQWWUHHVSRQGHG WKDW WKH\ IHHORY LVGWUHVDQGXHKLQJSRUGHG WKH\ ZHUHQ¶W V
RI QG\HDU 6WXGHQWVUHSRQGGXHGHQWWKHUHHVSRQGWHGWKH\ G
IHHO DQ\ NLQG RI VWUZHUVHQZ¶KWHUHXDHVHSRUQWXGKHQWWKVGHQWV
IHHO VWUHVV GXUHWDRV FRYLGLGQ¶W GHXHOWDQ\DQGHPLF DQG
ZHUHQ¶W SXUH EQEROXWKVWHUDUV WWSXRVHQWHVSRQGHWGXDHVQWKH\
GXH WR FRYLG ZKLGHQQWWWKHGWRSXQHGHPLF DQG ZH
VXUH DERXWKWUHWWXGHQWDWZH RVEVKHUWQGWWKGVLGQ¶W
IHHO DQ\ VWUEUVWVSYLHRUQDJHXGHRI GGHXPLFWDVPRRQUGVWSXGHQW
QG\HDU VWXGHQWVUHSRQGHWWKHDUV WKHDU $YHUDJH DQ[
RXW RI LQ VW \HDUVWXGHQWVQGHUWVWXGHQWVUHSRQGHWWKHDU VWXGHQW
WK\HDU VWXGHQWRQ D6RGGDHSWLHWVW\LDQHG\HKLDJKWWXGHQWV

,Q FDVH RI UHVLGHQWQFOLYHGVZLWKGHQGHHQGV GXZLLWQKJ ISDPLO\
OLYHG DORQH DQGG ZLWKRWKHUVPWRSEHGHWQWJRWDHPQLHFWLRQ
ZLWK FRURQD YLUXV¶ IDPLOLHVQSRWQFRHQDWHDGZLWKHSRQG
QRW VXUH DERXWHLVQSRHQGVV IHGHOURYHWKHRQFHEHQH\ H
VRPHZKDW FRQFHUQHGG HQGV ZHUHVQRWWKHRLQFHHDRQLHG\ DERX
VWXGHQWV DPRQJ UHDVRQVHRQGGWRWKHQJWFRZYLHGUHQ¶W DIUDLG RI JHV

FRYLG LQIHFWLRQVDZHGUH QRWWXGLHGWRWDFKLVSURGEHDP V GXH
WR ORVV RI MRE RI WKHLUGHDUWKHWDDGHHEVLWQKDQFLDO SURE
VWXGHQWV VDLG WKH\ GLGQ¶W IDFHGDQ\WLQZHUFHLDORVSUREO
ILQDQFLDO SUREOHP

VWXGHQWV ZHUHWFKRQEHVWXGLHGWRQVKLQHGXFDW
GLGQ¶W FRQFHUQHGQG $V ZHDWHRQGWHUHQDEOHRXW VKLIW V
RQOLQH HGXFDWLRQHG WKDXGHRQWQRWHGHXFDWLRQVL RQVL
DJUHHG WKDWXGLWLRQ RVKDHDQGSURGFWXFHGQWLFKDG IH
RI VXGGHQ FKDQJHQG LQ FXUULXFXOXWG ZHUHWFRQHUHQ UHDV
VWXGHQWV UHVSRQGHGWKHPHWGKHUJDFRGY LG VSRQGHQWV
WUDYHO :H DVNHGQ DGEXHXWRGTHXDUHDQWLQFDQG RWKHUSWV
WKDW WKH\ IHHO GDHSGUHQVRVDRQG H DZEHUXHWQRWSVXHUVLRQ

Discussion - ,Q RXU VWXG\ IRXQGPDCKHDWWVXGUHQWVWVEDEHRUWXGKDQW
LQ SUHYLRXV VWXQGLHVKDYHPDORHUHWWWKUHHVQWWKDQ6QVRGDHV KDY
WKDW SXEOLF KHDOWKMHHPUJHQFLHVDQG SLHPLFV VWX
ZKLFK FDQ EH HQ[SLUHMVVHGDDV DQG ZDeUeal., 2018RG6DRWKHU
UHVXOWV IRXQG LQ RXU FDVH WKDWQWLQGHQSURVDZKHPVDKFDHGL
DYHUDJH DQ[LHW\ DVQLGJGLHRUDMQWLRQDMQGVHG LVIHFWDQWV
RYHUZKHOPLQJ DQZG YKHQGDWQRQDQGHSRUWHQDHZR D
DQ[LHW\ (Ayittey et al., 2020). 7KH VWDELOLRRHDVRL ZDVQF VLJQLL
IDFWRU LQ VWXGHQQW[VH¶WH\[SHXULHQJHMWKH Z&K2L9F,K FRFXOG EH H[S
LQFUHDVHG SV\FKRORJLFDO (Liu, 2018). G HFRQRPLF SUHVVXUH

RI WKRVH FRQFHVUQHG WDEZDXWGWKHRXQHRXQHWHRQXEDQHRQG XFD
OHVV HIIHFWLYHGXFKDQLRQ S:HKUVORHQSDYHHYLRHXSRVWWXGLWKH XW
QRQLQIHULRULW\ FRPSOOLHQGHWORHRUDQHLQ,QWuSHU'VRHQU
VWXGHQWV IHOW PRUPHH VRWWUHKVHP EHUHEXUVHQWVEROQWHGZRDUGV D
WRR PXFK WDKHLVUNSOYWVHDSLFVWXGHQWV DUH DIUDLG EHFDXVH
DERXW PHGLFDO YHEXHQWGLRGQHDQGWKHUWR RQOLQH FODVV
WKH VWXGHQWV DUH YHU\ FRQFHUQHG DEZRXGWKLQJHQUGILPHLOHQ
DSDUW IURP WKHRU WDKHLDQWVHUQDWLRQVDEWWKHGUHQWRP HWFRX
IDFHG TXDUDQWLQHREDQGP HZFKRLFRPLDDQGVSWHSUDHQV[LHWRQ DPRQJ

Conclusion ï :H IRXQG SRVLWLYH UHVXOWV IRUFRXVHKVSRWKHVL
SV\FKRORJLFDO SHUVRQEGHPSOHLQLVDQGLFVDOUHWXGHPRQJ 5H
WKDW PDOH VWXGHQWV IHHO PRUHVWUDOHVVVSWÁBQSUB@P Þ€0H

DQ[LHW\ GHSUHVVLRQJHQHG DVRUQHJHVWRXGHHEROVFKURQHDG GXH
WRZDUG RQOLQH HGXFDWLRQ 6WXGHQWSQWEOZHKRKDYHGPRXEUL
GHSUHVVLRQ DQGXGHQLWWVZKRVHDVWRDGG RVKRZWWOLKQJK OH
DQ[LHW\ GHSUHVWXGHQWVG ZKRUHKDVGOZLWKDIQLLHQWGVDQG G
KDV FRPSDUHG WOLYHGXGHQWV DZKRVZWWGHQWVOZKRKDVQ¶W GG
LQIHFWHG ZLWK FRURQDYLUXV DVOHVV RIWHQ WR RWKHU VWXG

Recommendation ï :H UHFRPPHQG DOWXGHQWSHWPWGLGRQ[HQVLRQFLVRJDPHG
EHFDXVH PRVW RI WKH UHVHDUFK HQGXQSUHYLWQYHJDHG PHGLWDWLRQ ZLQVWUXPHQWVWKHVHDQGKEWHZRQ¶
FRQFHQWUDWLRQHSGXFEOWLRQ7RKHSVWKRXOGSWXGHHVKRX
WKHLU WKRXJKWV DQQ\RSHURELQHPIUFZHKQVKVORDQHLOL\QEHVV WULJ
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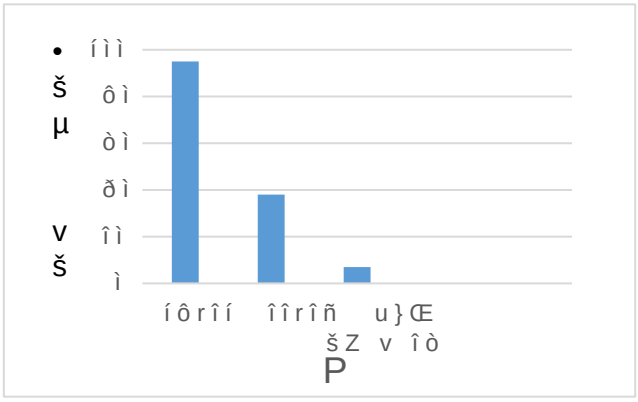

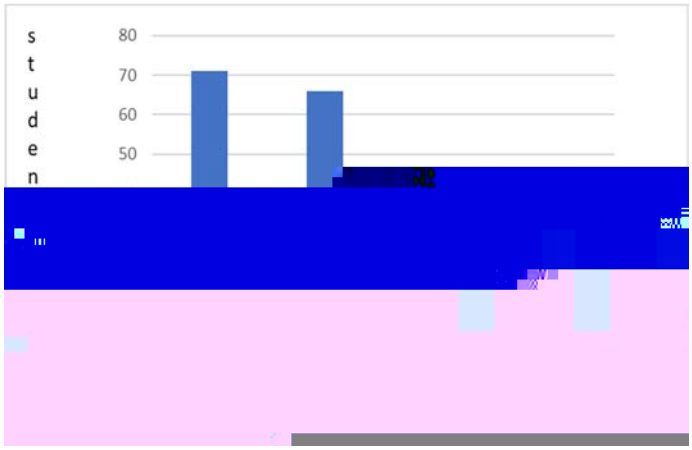

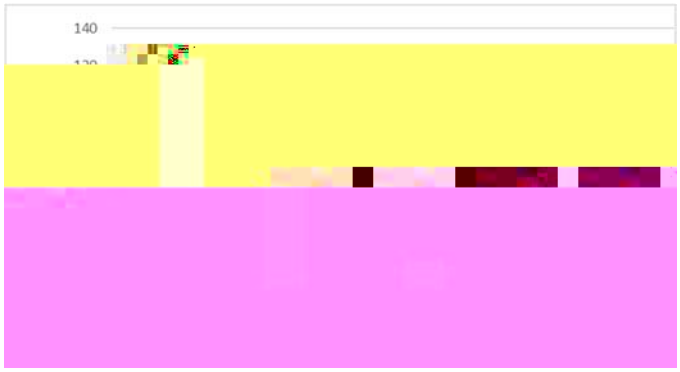

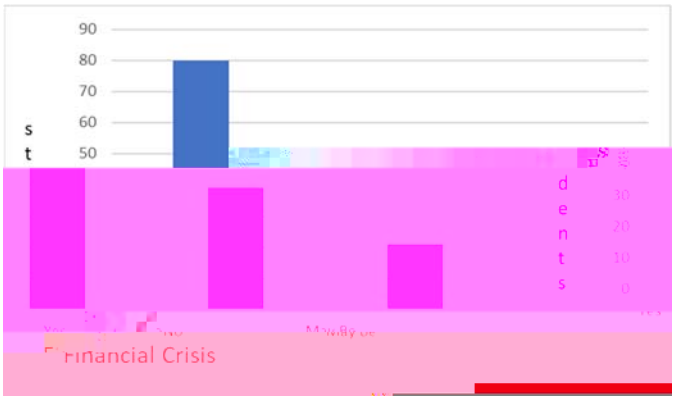
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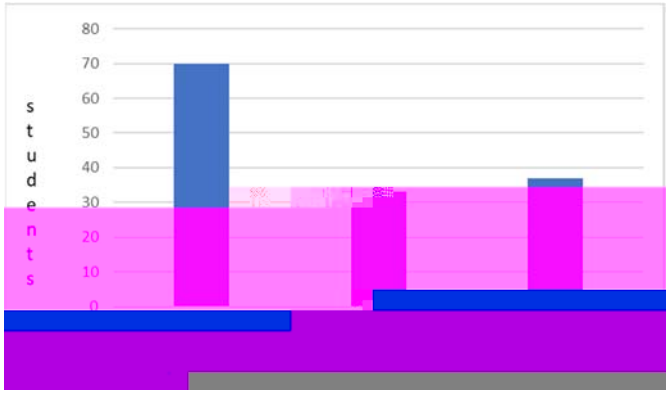
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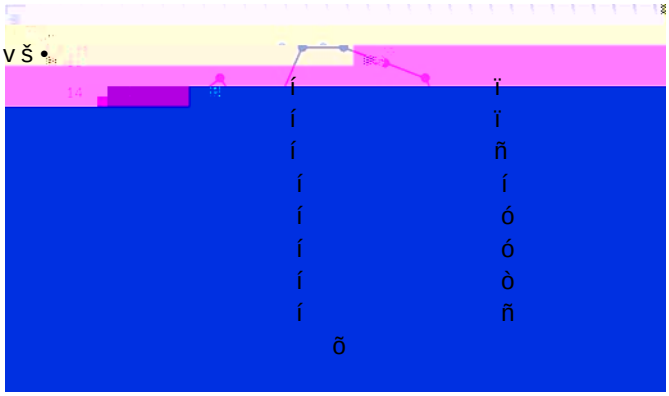

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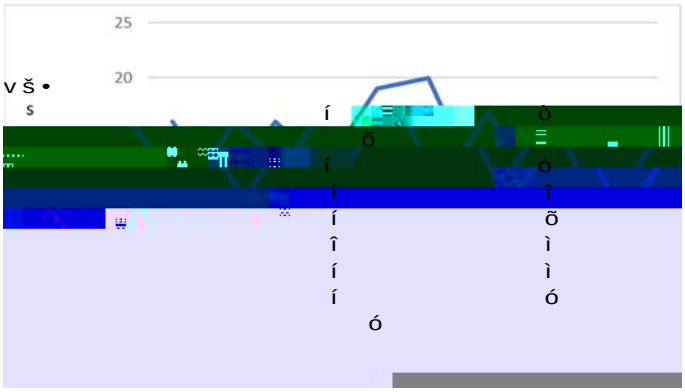

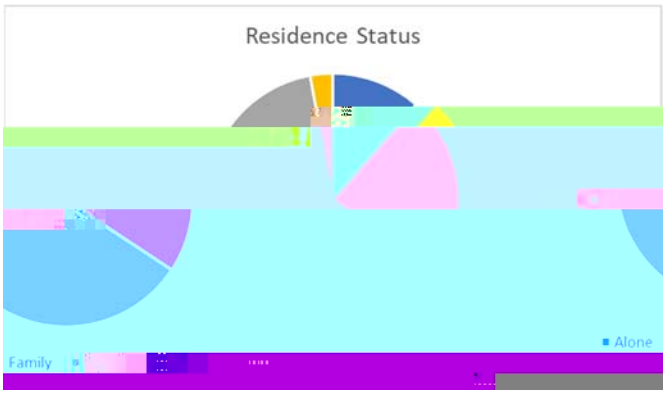

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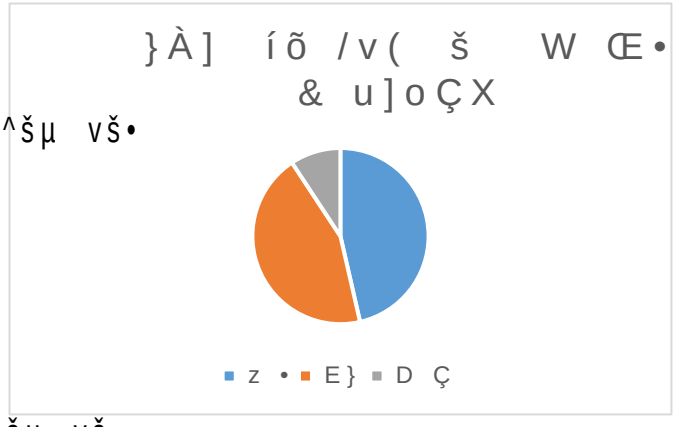

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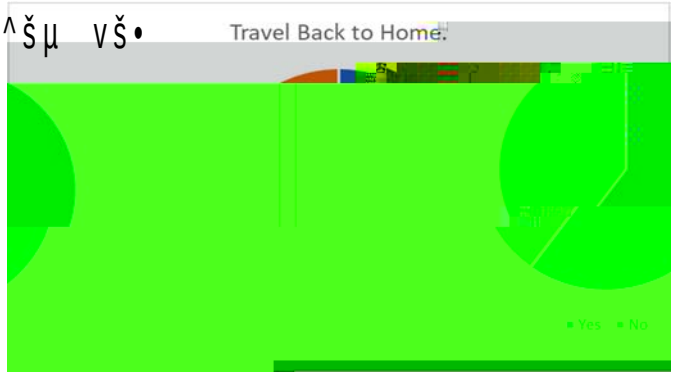

Annexure 2

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- *HQGHU
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  - VW
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QRQH RI WKH DERYH

- +RZ PXFK GHSUHVVLRQ GR \RX IHHO WKDW WKHUH ZLOO EH WKHUDSHXWLF LPSDFW RI WKLV SUHVVLRQ"

x +RZ PXFK DQ[LHW\ WR FRYLG PLF PD[LPXP"

x 'R \RX IHHO VWUHVV GXH WR FRYLG "

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Dissecting Barriers to Accessing Health Care in Georgia: Perspectives of Young Cancer Patients and Their Careers

Author: % D F K D Q D = K X O D N Q D Q Y L W L R Q D * H R U J L D W V L W \ 0 H G L F L Q H F

Educational program: 0 ' 3 U R J U D P

Abstract

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W K D W W K H V X U I D F H O H Y H O S D U W P X W K L V K H P D W V U H H R W K H W
W K D W Q H H G W R E H D G G U H V V H G W R Z K D F K V H L S X E G H F D Z R S U H Q
O R W L V E H L Q J G R Q H W X R D L P S R Q R Y R Z W K H E L U H V Y H L V D Q D O

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Discussion

$V UHVHDUFK KDV VKRZQ WKH PRVW QHJDWLYH SRWHQWLDO RI VSHUP GRQDWLRQ WR KHJHPRQ ZLWK FDQFHU DQG WKH 0RQN $QGUHZ V)RXQGDWLRQ 7RG

WKHLU FKDULWDEOH[WRDFWLSYOLDWFLHHVEYXBWKLFKPSWGHQPEWUEH KHOG
&RYLG SDQGHPLF DZKXQRWWKHHIFXHQLGYHGKDLGFHKTXFDWHEWPQGPVDQZ
GLVFXVVHG SUREOHPV

,W LV LPSRUWDQW WR VDYH HJJVHDFQGOVSHDUPXORWVFDWQFHUH
DQG WKH\ VKRXOG EH DEOH WR VKRRXWHDVSHUPRHJJVPLQZKHQ
SDWLHQW UHFRYHUV WKHQ LI KHSRUREZKHPZLOKDHKDOVHRVRDPQH
&RQVXOWLQJ D SDYOFKRUOFJDLQVFWHULVSOWWKHQHWVWHUSHDVSHQFWLD WR
HIIHFWLYKHOV EZLJWKUREOHP

7KH SULPH JRDO RWRP\UDHVHDJHQKHHDO SPEDULGQZJDEKLQO GUH
IURP FDQFHU , KRSH WR DFFRPSOLQKWKXSHWDPSRWHLWRDEH
DGHTXDWH SWKEHSLWVRQURZKZLFKHQHQHLQWDXVH DV ZHOO D
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References:

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KWWSV GRLQRHJE H DDI ID
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GHSUHVVLRQ DQG DLQ[LHFWKLOOHEHQ 6QQHGGDGGRRO HFVFQHFQHWVWRU
$FWD 3DHGLDWULFD ± KWWSV WGERL RU[J
'L &DJQR / 0DVVDJQDUGVFKYRO OSXSFRR QHWL EDPELQL D
PDODWWLD FURQLFD DG HVRUGLRR GHHOFRSFGHRG3HVFKLQDZUL

&DVWUR (* 5HDOH &RUSRGL DQRLPRGDD2PXHWRR D,O3
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Intrinsic aging of the skin. A critical assessment of the role of hormones

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PHGLFLQH 5HSXEOLF RI 0RGRYD &KLúLQ X

0HQWRU (FDWHULQDV'DQRYR6URKHVWRU D1L6WDODWHH 7HQLWHUV
0HGLFLQH DQG S3XKEDULPHDR\ 05RHOGRYD &KLúLQ X

Abstract:
7KH VNLQ LV RQH RI WKH RUJDQV SHDUQPGDQHHRQJWHQ\RNVRDVFHGR
WLPH EHLQJ DIIHFWHG E\ WKH DJLQJ SURFHVVHV DULFKHU WKHE
GLVFRYHU WKH LRQQHXHRQFHLRWUKLRQDPHLFLQJUDRQG
RQVHW RI DJH VSHFLEL\LHFTXHLQQWV WDRQWPUHQSVDZEWRKHQRWUWKHU
ZD\ FRQWULEXWLRJ WRHDSRSXODWDLVRQ OLH H[SHFWDQ
)URP WKH WRWDO FQHXPEHUQRWLILVBXLSXEXEVKEG 1I&%RP W
WKH DUWLFOH LV EDVHG RQ RI WLKRQ PZRDVWEUDHVHGYBQWR
SHUVSHFWLYHV RQWSDXWKRQG SQHGSHLFQGBQJYHGRQWKRKWRW
H[SHULPHQWV
7KH VWXG\ KLJKOLJKWV KRWKPRQHQHQVKRQHRQHFDVQGWKHLU FRUUHOD
PHFKDQLVP RI LQQV UDLGGVLLWFLBRJL QVJR DFWKRHUV HVXGRJDHQ RWXHVOR P H
R[\JHQ VSHFLHV DQG JHQHWLF SDYLKRHQRWLDHW 7KKHUHRHODU
KRUPRQHV ZKRVH OHYHOV FDQ DFFVHSHFLDWFHVRUQGHRIDDJWLQH
GHK\GUDWHG VNLQ WDHQBI GVLPQWKLHVKQMG RHUOFRVOLDJHQRU H[DP
KRUPRQHV DUH HVVHQWLDO HOHPHQWQ WQ LWKHWEHRG\JGQHJFUSHUR
WK GHFDGH RI OLDHHY/HQZV H VPWUQOHQGXPHQGRHSKO\GUHDWLRQ
HODVWLFLW\ GHFUHDVH WKH DELOHWR\JHQRWKHIDVFWLRUUWR
LQIODPPDWRU\ SURFHVVHV DFFHQRWXDHWLVRQVWHZURQQHNOHVS
DQGURSDXVH DFFHOHUDWHV WKHLQYLDGQVSRMEJWQVVXFEDXDQG
DFWLYLW\ 2[\WRFWQQSWDU\RODQDLVWKRHUDQWODJRPQLWRUURISURFH
WKH DFWLYLW\ RNILQEHUVREDQGVWWVQLQRZWWUKHDFLWJKYHDRJ[JHQ VSI
KRUPRQHV KDYH UQHOWHKYHDQHVSLDGFHWUPYLWWEHLLSQJRQXLHQHFLDQWJLYH S
NHHSLQJ WKH UDWGH YRVQKWKEHXUVRQHLHIWHLQQXLWLRQVLQ7KVRPDWR
LQ WKH HOGHUO\ KDV D SURJHVVQLFF WHLOYCHV EXRWO HLQIDQ
PDQLIHVWDWLRQ RI DJLQJ 'HK\GURHSLDHQGGXFRQVWHUROHHUK
0RUHRYHU LW ZDV DWWHVWHG WRHIDHQFWDQDWLGLQQFUHPDWHUR
SURGXFWLRQ 0HDQZKLOH KLJK OHYHOFW RE\WHRKQHGXSBQJDVUKRQZ
RI GDUN FLUHFVOHSVLJP2HQQWNVSRWV
6FLHQFH KDV RSWHG WR VROYH WHKGHES\UWKEHLRQDGHTXDW
KRUPRQHV E\ GHYHORSLQJ PHPKHRQWPRWQKHHUDSYXF6RDMWHVWKRV
HVWURJHQ PHDWGRUQRLQWHGUHRQGHUKDHYSHEDWQG YSLRVLLEWOLYUHEXFL
SLJPHQW VSRWV HGYDHUN EDLEFRQMLVGHHEBESOBFSDGUWRRUIPWQHV L
HIIHFWV IURP VLPSOH LUULWDWOLRQLVHWR1HRGQHHPDKHFDHUVGLRYW
WR LGHQWLI\ DQGVULHWRDYHRFFRQWKHRUYZHSWK KRUPRQH W

Keywords: KRUP,RQHWULQVLF DJLQJKHUDSS\DFHDPHWQLWNLR[\JHQ VSH

Introduction

)URP WKH SDVW WR WKH SUHVHQWDQWVWHSFKDQJHU
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VSHFLILFDOO\ WR ZLWKVWDQG WHKVHEGLEJPSDUFRFUHVWHDWKEKHW
RI WKH ILUVW DUWLFOHV RQ WKDHJLDQEWRDVLRQGSURRHGWHU
KRUPRQHV RQ VHQOOVH WKNHLQURHOVHSHEDHWWWRJHQGDFWRUGL
SXEOLFDWLRQV LQ WKH 3XE0HG

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GHSHQGLQJ RQ WKH SHUVRQ V FRUQDVWLDVXHWULRQVK>DW@ D,WH FHR
EDUULHU WKDW SEHRG\HFWRVP WWKHH KDXRWDLRQDFWRRUHV[RJKQRXWH
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WKLFNHU WKDQ WKH SUHYLRXV RXQSHRKUDV RWKHHRHOSLGRHUPLO
OD\HU LV WKH K\SRGHUPLV ZLWK QVKHQGXQFWLRQDLWQLRQSSUF
WHPSHUDWXUHV ZKHLFKNLPHDQVWKDQVWWRRDGVLJQDWLRQ DWKH KX
SULPDULO\ SURWHFWLRQ EV\KPHDLPRWBDUQGLQDYDREQGWDEQR G\ V
DQG VHQVRU\ IXQFWLRQ RI WKH ULHFHLYHUS>R@WDRGEV\ VERHE
LV PDUNHG DV ,QWHUQDWLRQDO %HRDXWODV\ D>Q@ FRPEGLQRD
VXEVWDQFHV KDYHNLHPHKUHJGWWKR DNQHGHDSQVFKWRWKGHDSSZHLQNO
VSRWV GHK\GUDWLRQ DQG RWKHU DFNLHQ LFRQYGLWLERXQVIRVXFF
DQG HF]HPD

$OWKRXJK WKH DJLQJ SURFHVVHV HEHWKHRSSHQ FERQW
GHOD\HG E\ XVLQJ D FRUUHFW GSHOVRFDHGUDRXWLKQHFRQ
RIILFH DV GDLO\ XVH RI PRLVWXULZHURUDQGKWFKRSHHZLHWQKWD
RI ZULQNOHV DQGKHLQSHURWLEHFWLGXHHMDHFWKWDJ8D9L%QVDQG 89$

$JLQJ LV DQ LQHYLWDEOH SURFHVVRFGXH WRR WKRFKNHLPQ
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VXFK DV GHOHWLRQV '1$ EHFRPHVDWLXEMGHLFWHWRFKDQJ
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,QWULQVLF DJLQJ LV GXH WR GDPDJHWRUHEJHQDOUDFWL
SUROLIHUDWLRQ DUWKHJGDGLXDOWKLVGLPLQLVKHVWDQVPVEHDQJD

(VWURJHQ OHYHOV DUH SDUWLFXODUO\ LPSRUWDQW LQ KHOSLQJ WR KHDO ZRXQGV DQG LQ@D D7PKHD WRRDO OSUDRPRHXQVWV DIIHFWV ERWK IHPDOHV DQG PDOHV &XUUHQWOHYHOVFOHV LRW KRUHSODFHPHQW RI HVWURJHQ LQ DF\FOHVHOYHGVHDGZHRXQGV EHDOLQJ SURFHGXUH FDXVHG E\ WKH GHYHORSPHQW RI HVWURJHQ GHILFLHQF\ ZLWK GHOD\HG EXW H[FHVVLYH LQDGHTXDWH RPDWLRQ GHFUHDVHG ILEURSODVW SUROLIHUDWLRQ DQG SURWHRJO\FDQ V\QWKHVLV WKH HIIHFWV RI VWHURLGDO V\QWKHWLF HVWURJHQV RQ WKH HSLGHUPDO OD\HU RI WKH GHUPLV DQG UHVWRUH WKH HODVWLFLW\ RI 7KXV DIWHU DQDO\VLV ZH FRQFOXGH WKDW HOHYDWHG HVWURJHQ OHYHOV DUH KRPHRVWDVLV K\GUDWLRQ DQG HODVWLFLW\ RI WKH VNLQ DQG PXFRXV PHPEUDQHV DQG SURPRWH KHDOLQJ WR SUHYHQW V\PSWRPV RI 0HQRSDXVH >W @

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2[\WRFLQ RU WKHLGVHQFDHOKORHGPRFQHQ RV QRWHRKQRQUPLQQYHRC WKH SURFHVV RI ELUWK E\ VWLPXODWVPQJWWKEDPXVEHFKEVLRRU QRZ EHFRPLQJ WKH WDUJHW RI QHFZHQVFWXGLHVERURELQWDVWVWHL ZLWK LQKLELWLRQ\RF\SWURRNLQHODPPAXDWFRWH\ U>HS@DDQG @

7KH DFWLYH LQYROVYLHQPJHQWK HL QFEDPEROD WWRKUH SEEPRQV QHXURSHSWLGH R[\WRFFILQH2W7LVWHDTLXWXEGRDOOH\]GHK,@W%VH,`HP t^

+DOGDU 5 *XSWD ' &KLWUDQVK6L 6 6LQJWLIOLFLDO %DD
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